University
News

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Editor :
SUTINDER SINGH

Issues in Higher Science Education

Some Contours

C.N.R. Rao*

Higher science education today presents a rather discouraging picture. There are serious complaints at all levels about the lack of responsiveness in the system. Academic activities are at a low ebb. Several factors of a complex nature have contributed to the present condition. Some of the factors are related to processes and pressures in our society and therefore reflect the social features prevalent in a particular region. However, there are several other aspects where planners, administrators and teachers can do much.

Undergraduate Education

1. We cannot consider problems and challenges of higher education in science without reference to problems faced in school education. We obviously need to re-examine science education at schools. There is no need to stuff our students with information on scientific subjects. Inculcation of scientific attitude in students is more important in the early school years, say up to 10th Class, particularly because many of them may not turn out to be scientists. It is also important that we make sure that there is a proper vocational stream available at school level so that all students do not rush towards science and technical courses at college level. There is need to provide general science courses at lower levels and give specialised courses only in the higher (11th and 112th) classes.

In spite of many problems we are facing in science education, it must be admitted that many good students come out of our school system and a good percentage of them do extremely well in scientific and technical professions. By and large, one might even say that training, at least in some of the schools in the country, is quite adequate and is not much inferior to that in good schools elsewhere. However, in a large majority of schools in the country, the quality of training and facilities are inadequate and we have to bring their level up.

2. There is undue interference by too many forces in the planning, administration and management of universities. It is not due to the concerned Governments alone. Affiliated colleges have been given too much importance in managing universities; this can be eliminated by delinking undergraduate examinations from the universities. Universities should provide leadership in curriculum development, higher education at post graduate level and research. Absence of a proper academic as well as administrative leadership, structure and practices have had damaging effect.

3. The common problems associated with undergraduate science education are well known. Undergraduate science education is generally concentrated in colleges, many of which are under-equipped, over-crowded and poorly staffed. Laboratory and library facilities are generally inadequate; proper textbooks are not available. The level attained by a BA or BSc; is very much inferior to that of a graduate in advanced countries. It is at the undergraduate level that we see this sudden gap in the quality of education. While there are some select centres where the quality of postgraduate education is quite good, similar undergraduate centres are not

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[Based on the Convocation Address delivered at Sri Venkateswara University, Tirupati, on 20-3-1986].

**President, Indian National Science Academy, New Delhi & Director, Indian Institute of Science, Bangalore and Chairman, Science Advisory Council to Prime Minister.*

available for bright students, who want to take up science. There are, however, several good institutions in engineering and medicine.

4. Undergraduate curricula are rigid even in the best of places. Combinations such as PCM and CBZ do not provide the necessary breadth or depth. The absence of flexibility has made it impossible for a good student to obtain sound training. For example, a physics student can study biology just as a biology student can never study mathematics or physics. We have to make flexible programmes available, at least in some of the colleges.

5. It must be noted that all those taking science courses at the under-graduate level, are not necessarily going to be scientists. Most of them are going to be something else. It is, therefore, all the more important that we have at least two streams in science education; one of general purpose and another of specialised nature (for those who want to be scientists). The absence of such specialised training is making our undergraduate education not so meaningful and it does not compare with the training received in good institutions in the advanced countries.

6. Even undergraduate education in engineering has many problems and drawbacks, the most serious ones being the indiscriminate number of overcrowded and under-equipped colleges. The capitation fee system has had a bad effect on engineering education. The curricula as well as the laboratory facilities in a large number of engineering colleges are below par. The best of our engineering graduates go abroad or go for management and sales.

7. A specific deficiency in undergraduate instruction (both in science and engineering) is that related to computers and microprocessors. When the computer age has started all over the world (and even in India), our education system has not made a good beginning in this direction. Unless use of small computers is introduced, at least at undergraduate level if not at school level, our younger generation will face serious problems.

8. The most disturbing feature in our education system is that of examinations. While most undergraduate education is imparted in colleges, examinations are conducted by universities who have no direct interest or control in the educational process itself. We have to do something drastic to minimise the importance of examinations and increase the role of colleges in evaluation and examination. It appears as though much of the time of universities and teachers is spent in organising examinations and in declaring results. This is counter-productive.

9. In another 15-20 years, the student enrolment will get doubled. Can we even duplicate the present facilities (however poor)? Selectivity is obviously important.

We have to find ways of tapping the best talent available for science. Present efforts in this direction are by no means thorough.

Postgraduate Education and Research

1. Many of the problems mentioned earlier with respect to undergraduate education also hold for postgraduate education. There are too many institutions offering postgraduate education in science. Most of them are under-equipped and poorly staffed. There is no point in producing such a large number of MSc graduates. At the master's level, the number of people trained should have some relation to the national manpower requirements. We must have selective admission and selective recognition of institutions at least at the MSc level. It is often said that our MSc is not as good as a BA or BSc from the better universities of advanced countries. This has to be rectified if our training has to gain respect in the eyes of our own community and the rest of the world.

2. University departments are supposed to carry out research. Although some good work has come out of the universities, it would not be wrong to say that most university departments have poor infrastructure facilities. They are also short of highly qualified and motivated teachers. Now-a-days, research support to individual scientists is quite satisfactory. Some of the good departments are getting infrastructure support under the COSIST programme. However, the institutional infrastructure seems to be generally poor; shortage of student accommodation, amenities, poor electricity and water supply are common. Unless the universities have sufficient strength to support higher education and research, the support we may give individuals or departments would not yield maximum benefit. It is, therefore, important that universities get more basic bread and butter funding. A possible solution to this would be to give a good percentage (say, 40 to 50%) of the research support as overheads to universities. This has to be in addition to the budget already provided for research by the funding agencies, thus enabling our educational sector in getting some funding for science from the Govt. Otherwise Plan budgets allocated for science in the educational sector are too meagre.

3. Post-graduate education is not attracting the best talent, the problem being especially severe in engineering. Engineering research in the education sector has suffered badly because of this. The 3-semester ME

programme has affected research efforts of engineering faculty; possibility of thesis and non-thesis option ME degrees could be considered.

Some Priority Recommendations

1. Admission to the science specialization stream should be made selective; students in the special stream must get the best possible science education. A general purpose degree with some science courses should be more than adequate for students going in for other professions. The selectivity could also occur at school level so that the number of students in the science stream would become small, thus enabling colleges and universities to provide better education and to improve the available facilities. This is very crucial in view of the increasing number of colleges and students in the country.

2. A few model undergraduate science colleges or institutions should be started in each State to attract students for science just as IITs and Regional Engineering Colleges have been attracting students for engineering education. To start with, one such institution in each State could be instituted. The facilities and capabilities of certain major institutions (IITs, IISc etc.) could be made use of for the purpose. It is estimated that about Rs. 5-6 crores (for 5 years) would be required for one such institution.

3. Universities should no longer be responsible to conduct undergraduate examinations. Individual colleges or groups of colleges should conduct examinations and give a certificate to the students. Although this may pose some difficulty in the initial stages, after a few years the situation will stabilise. Unless we do this, there is no way how in another 15 or 20 years, when we would have double the student population of the present day, we can conduct examinations the way we are doing now. In order to calibrate performance, the university may like to give one or two tests in each subject. Students could take these examinations in addition to the college examinations in order to enable others to evaluate their performance in the undergraduate programme. This would mean that admissions to postgraduate institutions as well as employment will have to be based on selection examinations conducted by each institution, rather than based on college performance alone.

4. (a) Textbooks in all subjects (at undergraduate level at least) should be made available to students. Colleges must have several copies of texts in the reserve sections of libraries.

(b) Computer facilities and formal training programmes in computing must be made available in each major town or city, if not in each college, so that youngsters can get adequate training. Such courses could be conducted during holidays and during off-hours to enable participation of a wider group of students.

5. There should be more recognition and support for the fabrication and production of local equipment and instruments.

6. In view of the exploding frontiers of knowledge, better ways of training and retraining teachers will have to be explored. Ways have to be found for attracting better scientists and engineers to the teaching profession. One possibility is to depute young graduates to advanced institutions here and abroad and get them trained in specific areas.

7. (a) Support to select departments under the CAS and DSA programmes of the UGC should be enhanced. It would be desirable to support research units of individual workers where necessary; this would be specially applicable to situations where the department itself may not be strong enough to get adequate support.

(b) Infrastructure of universities has to be improved greatly. Since there is no simple way of doing this other than by increasing the budget of universities, it is proposed that an additional source could be provided by encouraging funding agencies to grant a reasonable percentage (say 40-50 per cent) or the research grants as overheads. This would mean that those universities which carry out good research work can also get good support from the funding agencies. This would also act as a good incentive for carrying out research.

8. Project-oriented undergraduate instruction should be encouraged both in science and engineering colleges rather than stuffing students with bookish material. Such project-oriented education could be given to select students, if not to all students. This would become possible only if the undergraduate curriculum becomes flexible; this would also enable students to take a good mix of courses and eliminate the imbalance that we find now where physical science or engineering students cannot take biological courses and vice versa.

Research, development and design, instrumentation, etc. should be given proper academic recognition, if necessary by awarding appropriate degrees (e g. Ph.D. Tech.)

9. We should intensify talent search in all parts of the country in order to ensure that the hidden, untapped talent is available to the country. ☐

Purpose of Higher Education

A Plea for a Fresh Look

R.K. Thakur*

What is the purpose of higher education? Why do people desire to have higher education? We must reflect upon these basic questions while framing our new education policy.

Purpose of Higher Education

A close scrutiny will reveal that only a microscopic minority of the people go in for higher education because of a genuine yearning for learning. Another negligible fraction of the people crave for higher education with a view to obtaining university degrees for their somewhat ornamental value. However, the majority of the people go in for higher education with the hope that it will enable them to get lucrative jobs. But the hope of only a small fraction of such people materializes. On the contrary, the hope of the majority of these people is belied. In fact, higher education is a kind of mirage. People run after it with the hope of getting jobs but ultimately get dejected.

Irrelevance of Higher Education

By and large higher education is totally irrelevant to the needs of the society. A little thinking will convince one of the fact that most of the people hardly find any use in their jobs of what they learnt in colleges or universities. For example, one can get through I.A.S., I.P.S. or other Central Services examinations by offering any combination of three or two subjects from among a set of diverse subjects like mathematics, physics, chemistry, botany, zoology, geology, history, economics, political science, law, philosophy etc. Now, an I.A.S. officer who offered physics as one of the subjects in the I.A.S. examination may be as successful an administrator as the one who offered, say, philosophy in the examination. Then where lies the use of the knowledge of physics or philosophy, or for that matter, any other subject in the I.A.S. or I.P.S.? Obviously, the subjects one learns in one's college or university are totally irrelevant to one's job. More or less the same situation prevails in case of other jobs also. However, one may argue that the formal education broadens one's horizon and thus helps one in developing one's understanding about the world around him. But there are other and better ways of doing this.

Thus most of the formal education does not serve any useful purpose. On the contrary, even after graduation, persons having professional degrees are unable to handle simple tasks. Even for very simple tasks they have to depend on petty technicians. Evidently then, formal higher education does not prepare persons for the jobs that they subsequently take up as their career.

Thus, barring the cases of the persons engaged in teaching, research and the task of development in various fields, imparting higher education to others is tantamount to waste of human and material resources. It is totally irrelevant to the needs of the society.

Job Oriented Courses

In view of the serious unemployment problem in the country, there has been a clamour, for quite some time, for introducing job oriented courses as if the introduction of such courses will, *per se*, cure the malaise of unemployment. Before talking about job oriented courses one must have the following basic questions in mind. Have the available jobs been clearly spelt out? where are the jobs? What are the jobs towards which the courses are to be oriented? Do we have an adequate number of jobs? Is the number of jobs available commensurate with the number of job seekers?

Efforts have been made to introduce the so called job oriented courses by some institutions. However, the results have been dismal. Even after successfully completing such "job oriented courses" persons remain unemployed. This is because such courses have been introduced without giving proper thought as to whether there is sufficient demand for such persons in the job market.

Colossal Waste of Human Resource

From the foregoing it is obvious that making provision for higher education for a large section of the society amounts to squandering of scant national resources. It also amounts to a colossal waste of human resource which could otherwise be converted into a huge manpower and utilized for creative and other useful purposes. In order to convert our vast human resource into a useful manpower what is needed most is the proper and effective manpower planning so that we can develop into a strong, self-reliant and economically independent nation. Needless to say, we must find socially useful job for every youngman. There is no

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**Professor and Head, Department of Physics, Ravishankar University, Raipur.*

sense in deffering the problem of providing jobs to youngmen by sending them to institutions of higher learning. This deferment of the responsibility on the part of the nation is leading to several socio-economic problems. The students in colleges and universities are, now-a-days, very well aware of the fact that the serious studies hardly pay and that higher education is not going to provide them jobs. Hence, they are hardly serious about their studies and join colleges and universities to pass time and to enjoy life at their parents' expense. Consequently, they indulge in destructive activities like participating in strikes and demonstrations, copying in examinations and indulging in other kinds of rowdyism. Much to the disadvantage of the nation, the politicians also exploit them to meet their ends. Thus the future pillars of the nation do not acquire the much required inner strength. On the contrary, they go astray. Further, by going through the ritual of the so called higher education they become disrespectful towards the dignity of labour and hanker after white-collar jobs which do not exist in adequate numbers. Essentially, they become useless for other kinds of jobs. Thus, the higher education has a demoralizing effect on most of the youngmen. Sadly enough, instead of producing manpower, higher education is nipping the potential manpower in the bud.

Terminate General Education after the 10+2 Stage

Therefore, it is highly desirable, nay imperative, that the general formal education be terminated after the 10+2 stage in higher secondary schools. Only a selected few youngmen who are highly motivated and have inherent urge for knowledge and wish to take up learning, teaching and research as their career ought to be given opportunity for higher education. Such youngmen should be fully supported during their higher education.

Manpower Planning

The rest of the youngmen must be provided with jobs. It should be realized that the education, whether it be job oriented or otherwise, cannot create jobs by itself. It must be categorically mentioned that the system of education cannot be held responsible for the malady of unemployment. The planners of the nation are actually responsible for unemployment. The blame for unemployment has been misplaced on the educators.

What is needed most is the proper manpower planning so that the vast human resource can be fruitfully converted into useful manpower. For this the available jobs must be clearly spelt out. Obviously, at present, the number of available jobs is not commensurate with the number of job seekers. Hence new jobs have to be created in different sectors. For the economic growth and development of the nation, the emphasis should be on the creation of productive jobs. One often hears about encouraging youngmen for self-employment. The banks have floated loans to unemployed graduates for self-employment. However, the results have not been very encouraging. Many of the such "self-employed" youngmen have evaded repayment of loans as a consequence of which the banks have incurred heavy loss. Further, these "self-employed" youngmen have been either acting as middlemen or have been producing goods and services for which there is hardly any demand or use. Even for "self-employment" the youngmen should be compelled to take up productive work.

On Job Education

Immediately after the 10+2 stage of education youngmen must be selected for various available jobs on the basis of their aptitude and calibre. For this, suit-

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able aptitude and calibre tests must be developed. After selecting youngmen for various permanent jobs, they should be given "on job education". They should be taught subjects that are relevant to their jobs and at the same time they should also be given practical training. Unnecessary formal education should be avoided. During "on job education" they should be given stipends so as to enable them to support themselves. After the 10+2 stage of education youngmen should not be dependent on their parents.

Hitherto the entire expenditure on higher education has been practically borne by the government. After education youngmen get employment in public as well as private sectors. With the proposed scheme, the private sector will also have to bear the expenditure on the "on job education". Apart from the public sector, the private sector, and to some extent foreign countries also have been the beneficiaries of higher education. Thus the government has been spending money in educating persons for the private industries as well as for some of the foreign countries. With the introduction of the "On Job Education" scheme, the beneficiaries will be required to pay for the education of their prospective employees.

Delinking of Degrees from Jobs

With the advent of competitive examinations for important jobs, the degrees are, in fact, already delinked from jobs to some extent. However, the proposed scheme of "on job education" will automatically and completely delink degrees from jobs. Unmotivated youngmen who do not pursue higher education with the objective of learning, teaching and research will naturally be discouraged from pursuing higher education. Further, this will save colossal waste of human resources.

Open Universities

There may be some persons who may be interested in higher education—even after getting employment—with a view to expanding the horizon of their knowledge about subjects which may or may not be relevant to their jobs. They may desire to utilize their spare time for acquiring knowledge as well as higher degrees and may wish to do so at their own pace and according to their own convenience. Such persons need not be discouraged from acquiring higher education. To cater to the needs of such persons a number of open universities may be started. They may be enrolled in these open universities and may be allowed to fulfil their pursuit according to their convenience and pace. Suitable teaching material and postal instructions may be made available to such persons at appropriate cost. In addition to this, extension lectures and suitable T.V. programmes may also be arranged for them. After completion of the course requirement, these open universities may conduct examinations and award degrees to such persons. □

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A few fellowships are available for deserving candidates who wish to proceed to do Ph.D. ONE salary protected fellowship is available for those selected from among College teachers for Ph.D. in Education (Interdisciplinary). The fellowships would be governed by the rules of the Indian Council of Social Science Research, New Delhi.

The course would ordinarily commence from the second week of July, 1986. Application form and other information will be supplied on request and on payment of Rs. Five either in cash or by I.P.O. drawn in the name of the Director, Indian Institute of Education, Pune. The applications duly completed should reach the Director on or before **10th June, 1986**.

DIRECTOR

Low-Cost Laboratory Equipment from Delhi University

J. Radhakrishnan

Agitations make news. Constructive activities do not. Thus, Delhi University often hits the newspaper headlines for strikes, demonstrations and dharnas. But who has heard of the austere second storey room of the Chemistry Wing in the sprawling university complex in Delhi, where a group of teachers and students are quietly engaged in designing and fabricating basic laboratory instruments for teaching chemistry ?

These low cost equipments are very much needed because non-availability of simple, cheap, reliable and easy-to-maintain instruments hinders science education in schools and colleges in many Third World countries including India.

Co-ordinating this project is Dr. Krishna V. Sane, Professor of Chemistry at Delhi University. He brings to the project, 25 years of teaching and research experience in India, America (Princeton and Stanford), Denmark and England. He has specialised in theoretical chemistry, instrumentation and educational technology.

The Delhi project was the outcome of study on science education in developing countries carried out in 1979 by the Committee on Teaching of Chemistry (CTC) set up by the International Union of Pure and Applied Chemistry (IUPAC). It was headed by the renowned Indian Scientist Dr. C.N.R. Rao. The CTC was alarmed at the deteriorating quality of teaching chemistry in schools and colleges in India and in most of the developing countries. It attributed this to the lack of laboratory curriculum due to poorly equipped labs.

Dr. Sane explained that the rising costs and sophistication of scientific instruments makes it difficult to equip a student laboratory and to maintain the equipment.

To rectify these handicaps, the CTC recommended a pilot project at Delhi University, in collaboration with the UNESCO and the Committee on Teaching of Sciences of the International Union of Scientific Union. An interdisciplinary team consisting of chemists, physicists and technicians of the university was formed to direct the project. This called for involvement of teachers and students working during spare time, holidays and vacations, to develop and fabricate, at first, basic laboratory equipment needed for chemistry teaching. One stipulation was that the components used should be locally available and that the overall cost of the equipment should be as low as possible. But low cost must not be at the expense of precision and quality essential for laboratory work.

According to Dr. Sane, groups of enthusiastic teachers and students have so far successfully designed low cost versions of several instruments and accessories like PH meters, conductometers, calorimeters, polarimeters, conductance cells, electronic timers, magnetic stirrers, and electronic thermometers.

"We have tested these instruments. We have sent them for evaluation to several institutions in India and abroad. Their quality is considered quite satisfactory," said Dr. Sane, adding: "Keeping in mind the financial restraints faced by many educational institutions in India, we have made several designs of the same instrument to suit different grades of requirements." For instance, eight types of the PH meter have been designed to suit different budgets. Thus an all-purpose PH meter costs Rs. 600. And a very low cost PH meter for use in schools costs only Rs. 180. These prices are about a quarter to a tenth of the market price.

The important factor contributing to the low cost, Dr Sane pointed out, is that the accessories used cost little or nothing at all because they are made from discarded materials like carbon rods of discharged dry cells, thermocole packing and so on. Thus glass electrodes are made from recycled glass test tubes, and graphite electrodes from carbon rods of discharged dry cells. Such electrodes are used in electrolytic cells.

"Thanks to the technological advances made in India in the past decade electronic components and a variety of other materials are now made or are easily available in India. These locally made ones are cheap, rugged and easier to use than their imported counterparts", Dr Sane said. The locally-available, inexpensive, durable, safe and versatile electronic materials offer unparalleled opportunities to launch similar projects in different parts of India and many Third World countries, Dr. Sane added.

The Delhi pilot project group is not content with work at the lab. To popularise the philosophy behind the project, a series of workshops have been held in several centres in India and abroad. Since none of these has prior training in electronics and instrumentation, the stress is on simplicity.

After the international workshop in Madras in 1981, five others have been held in India and eight in Brazil, Guyana, Denmark, France, Sri Lanka, Jordan, Puerto Rico and Bangladesh. In these workshops, participants assemble at least one complete unit. Thus at Hyderabad and Guyana workshops, participants made some 20 instruments. In Delhi 12 students participants in a UGC-sponsored workshop 50 made instruments—25 PH and 25 conductometers. These have been distributed to 20 institutions for use and evaluation.

The equipment have also been used by teachers and undergraduate students of the department of chemistry at Lyons, France, and found to be satisfactory. A similar study is being carried out at the Royal Danish School of Education in Copenhagen. The Delhi-made equipment were also exhibited at the Sixth International Conference on Chemical Education in Maryland, the IUPAC general assembly session at Leuven in Belgium, and at the ICSU-CTS session in Paris. Several inquiries have been received from these countries, Dr Sane said. "There seems to be an excellent chance that the common concern about instrumentation and its role in science education may bring together specialists from different disciplines and different countries—developed as well as the developing—in the effort to use local talent and local materials."

In this context, Dr Sane stressed that international sponsorship of the Delhi project (by the IUPAC and ICSU) have not only highlighted the urgency of the need for low-cost-equipment, but more important, provided avenues for global exchanges of information, collaboration and expert scrutiny.

Also, the joint effort by chemists, physicists and technicians enables a balanced consideration of the theoretical and practical matters and of the related fundamental and applied aspects.

Time and again, he highlighted the fact that the low-cost of the finished equipment should not be confused with low quality. The people concerned with design and fabrication are conscious that quality should never be compromised. So the objective is not to produce an apparatus which is merely cheap but in addition meets the demands of accuracy and precision require in the school and college labs.

Looking ahead, Dr. Sane says that as long as the project is confined to Delhi and to making only chemistry laboratory equipment, it may not make the needed large-scale impact. "It is necessary to initiate new groups, to spread the approach to sister sciences, and that way develop as many equipment as possible for teaching science at all levels in schools and colleges in India as well as in the Third World countries."

To achieve this, he stressed the need for a permanent training programme, with assured support from the government, the UGC or some other agency or foundation. Also, an enlightened industrial or private sector agency should undertake responsibility for quality control, technical and industrial expertise for large-scale production and distribution on minimum profit basis. Meanwhile, universities should speed up the acceptability of change in curricula that demand improved science teaching with stress on laboratory work. At present, he noted, many educational institutions have chosen the easy way out—to confine their courses to theory only, omitting laboratory work due to non-availability of needed equipment.

With 2,000 science teaching colleges and many more coming up every year, he foresaw the need for eight to 10,000 instruments to equip all the laboratories in schools and colleges all over India. There is thus a pressing need for training, control and production on a permanent footing.

But in any expanded activity, Dr. Sane insisted, teacher-student participation in design and fabrication should be maintained. Otherwise, the project could well end up as commercial one with the emphasis on profit. "The Delhi project's crusading spirit must be maintained," he declared. □

[*Courtesy* : The Hindustan Times]

Shri Narasimha Rao Addresses Convocation of Gandhigram Rural Institute

Excerpts from the Convocation Address delivered by Shri P. V. Narasimha Rao, Union Minister for Human Resource Development, at the Gandhigram Rural Institute, Gandhigram on March 15, 1986.

Convocation

"..The occasion of a convocation is particularly associated with the concepts of faith and education. A convocation was traditionally an assembly of learned people called to deliberate in these fundamental issues. However, in our own context a convocation is mainly associated with the University, wherein it is an annual event for the ceremonial bestowing of degrees and other honours. Despite this convention, we may pause a few minutes to ponder over some matters which are of primary importance in the area of learning.

We have seen the moulting of dogmas through the ages, the emergence of doubts in our value systems, ancient institutions and morals which seem to crack under the persistent growth of our knowledge. In spite of the richness of human mechanisms we find that there are still limitations in our understanding humanity as a whole. The store of knowledge we have accumulated has itself become dangerous to human society. Is humanity destined to become a slave of the very knowlegde which it has pursued so vigorously for its liberation? Is the essence of learning cast in a coffin of doom or should it flourish in the unbound spaces of freedom and wisdom? These questions are important because what we teach and what we learn eventually set the pace for the society as a whole.

To harmonise the realm of ideas with the field of action is generally a difficult process and yet it must be attempted. This is what we shall endeavour to do in our new education policy. No doubt you must have read so much about it in newspapers, magazines and editorials. It is in the process of formulation and what is being attempted is for the country as a whole. I would wish to emphasise that phrase—"the country as a whole" — because it is important for everyone of us from time to time, to reflect on our identity as Indians. In spite of the fact that there is, in our country, so much diversity in food, languages, cultures and traditions, yet there is always a perceptible connection between people in a State with those far beyond its boundaries. Every Indian feels the need to keep India united and strong and recognizes the basic importance of education as a catalyst and unifier. It is also for this specific reason that the basic postulates we are working on stress the need for a core curriculum, consisting of sciences as well as humanities, which will inform and educate our students in these disciplines and simultaneously help us to develop our ability to recognise our essential Indianness. Without juming the gun at this stage, I should like to say that our vision of the role of education—and particularly of the university, in Indian life is substantially broader and more comprehensive.

Let me now taper towards a more specific sphere within the domain of education and dwell a little upon the nature and function of our Universities in general and what I envisage about the Gandhigram University in particular. We have at present, in our country, a large number of Universities. This is neither a matter for regret nor for self-congratulation. It is a statement of fact. However, it is far more important for every serious educationist to evaluate the quality of universities. That in the first instance, brings us to the need for a clear definition of "quality". In other words we should be clear about the quality of quality. Without going too deep into this scrutiny, I may perhaps sum up the nature of quality as a whole bundle of characteristics which lead to the emergence of every citizen as a complete human resource, developed by the educational process which society has devised for him or her. From this standpoint we are confronted with the unpleasant truth that our educational process does not fully measure up to this criterion of quality. It is crucial that we find a way out of this impasse if the qualifications, degrees and medals you get are to be truly symbolic of inner growth and strength.

It is easy to say what I have said. The diagnosis of the malady is simpler than the solution. It would take a lot of effort to shift us out of the situation we are in. However, a correct diagnosis is an achievement in itself and would also furnish some insight into the possible directions in which solutions could lie.

When we look around, we notice stark inequalities in our education system. The type of instruction a village student receives vis-a-vis the type of training facilities given in a premier institution, coupled with the fact that money is becoming more important than merit, sometimes leaves a large mass of students embittered and angry. It is freely said and believed that a certificate of quality, any quality, can be purchased. I am sure there is a big element exaggeration in this; but by the same token, a small element of truth also cannot be ruled out.

If we are to keep pace with the times we must prepare ourselves to move ahead in spheres of agriculture, industry and commerce. A lot has been achieved already by us after independence in spheres of agricultural production and industrial technology. Yet we lag behind when it comes to our average level of nutrition and literacy. Our endeavour is to improve the quality of life of every citizen. Logically, therefore, the fruits of our collective achievement should reach each and every citizen, including those living in the most backward parts of our country. If we are striving for the whole nation's future, we have to carry the citizen in the remotest part of this nation into the future along with his fellow-citizen living in areas where opportunities are available. The fact of the matter, however, is that for a variety of reasons the village people are migrating to the cities in search of facilities and opportunities that normally ought to be available to them in their rural habitat. The worst part of this migration is that it is totally unplanned and haphazard. The cities are groaning under the unexpected weight of an unwanted influx, the villages are being depleted of talented and able-bodied persons in very large numbers. It is an unsatisfactory situation all round.

In this context the vision of Gandhiji seems so appropriate, his dream of the village republic where no one is idle for want of work, where each citizen has nourishing food, a home and sufficient clothes to cover the body. These would be the ideal objectives of manpower planning where the villagers would be "self helpful and self-reliant, competent to make an effective use of modern resources to the fullest development of their physical, economic and intellectual conditions."

Your Institute is an important link in this approach where an education package can be provided along with opportunities for acquiring skills and an exposure to community life and social responsibility. You can play an important role in blocking or atleast fighting the unhealthy phenomena which has affected our village life.

It is sometimes thought that this suggestion is an indirect attempt to make or convert a few chosen institutions into 'ivory towers' at the cost of others. I do not think this is true. Within the context of education, an ivory tower does not imply a lack of commitment to humanity at large. For Karl Marx the British Museum was an ivory tower. If he had not had access to a retreat of that kind, or to a library where he could research, the theory of socialism and our understanding of capitalism would have been the poorer today. The truth is that every proper system of education requires an environment as well as an academic culture. What perhaps needs to be ensured is that there is a regular communication and feedback between the ivory tower on the one hand and the field experience on the other. One of the sensible methods of achieving this, it seems to me, is to locate a fair number of universities in the rural areas where the grass roots problems can be encountered in actual form and content. Gandhigram is thus the fulfilment of a necessity; it is not just a dream or a fad, as some of our friends seem to think sometimes.

I see within your institution one remedy, or atleast an alternative, to the general situation within our country. The names of your institute, a combination of 'Gandhi' and 'gram'—should, I think, be taken to reflect the nature of the setting to which it belongs. If it succeeds, it can become the stabiliser of the Indian society in a variety of ways.

The Gandhigram Institute seeks to fulfil at least two objectives that make it distinctively different from the run-of-the mill university. First, it attempts to provide such institution training in all branches of learning as will promote a balanced and well adjusted society. Second, it functions as a centre for research and work in rural development which, just like urban or any other area development, needs the relevant locale and constant touch with real life situations. It is not necessary that the knowledge, experience and expertise developed at this university is confined only to the rural areas. It can, and will, radiate everywhere and along with its inter-action with research in non-rural areas, will become a meaningful input in the sum total of national experience and expertise. I do not, therefore, see any reason to feel that this university's contribution is going to be anything inferior. It is in this spirit of equality and common endeavour that the efforts of Gandhigram university will be crowned with success. I wish you all the best on this happy occasion and felicitate all those who are receiving their degrees. May they prove their worth as the saviour of rural India, and therefore, of India". □

Central Advisory Board Of Education Reconstituted

The Central Advisory Board of Education (CABE) whose term expired in September, 1985 has been reconstituted by the Government of India. The Government has also availed of this opportunity to redefine the functions of the CABE in the context of need for greater coordination in areas of education between the Central and State Governments and between State Government and local bodies and non-government agencies, and the importance being given to Human Resource Development. The revised functions of the CABE are:

(a) to review the progress of education from time to time;

(b) to appraise the extent and manner in which the education policy has been implemented by the Central and State Governments, and other concerned agencies, and to give appropriate advice in the matter;

(c) to advise regarding coordination between the Central and State Governments/Union Territory (UT) Administrations, State Governments and non-government agencies for educational development in accordance with the education policy; and

(d) to advise, *suo moto*, or on a reference made to it by the Central Government or any State Government or a Union Territory Administration on any educational question.

For effective discharge of these functions, the Board has been empowered to :

(i) call for information and comments from any Government institution, any other organisation or an individual;

(ii) appoint committees or groups comprising members of CABE and/or others as may be necessary; and

(iii) commission, through Government or any other agency, studies, research or reports on any specific issue requiring attention of the Board or its committees or groups.

The composition of the reconstituted Central Advisory Board of Education will be as follows:

1. Union Minister for Human Resource Development — Chairman
2. Minister of State for Education and Culture,—Vice-Chairman
3. **Representatives of the Government of India**
   - (i) Minister of State for Youth Affairs and Sports, and Women's Welfare
   - (ii) Minister of State for Information and Broadcasting
   - (iii) Minister of State for Science and Technology
   - (iv) Minister of State, Ministry of Welfare
   - (v) *Member (Education), Planning* Commission
   - (vi) Deputy Minister, Ministry of Health and Family Welfare.
4. **Representatives of the State Governments and UT Administrations**
   - (i) Ministers incharge of Education in each State Govt.
   - (ii) Lt. Governors or Ministers incharge of Education in each UT Administration.
5. **Elected Members**
   - (i) Four Members of Parliament from Lok Sabha.
   - (ii) Two Members of Parliament from Rajya Sabha.
   - (iii) One Member of the Association of Indian Universities elected by the Executive Committee of the Association.
   - (iv) One Member of the All India Council for Technical Education to be nominated by the Chairman of the Council.
   - (v) One Member of the Medical Council of India to be nominated by the Council.
6. **Ex-Officio Members**
   - (i) Chairman, University Grants Commission
   - (ii) Director General, Indian Council of Agricultural Research
   - (iii) Director, NIEPA
   - (iv) Director, NCERT
   - (v) Chairman, CBSE
   - (vi) Vice-Chancellor, Indira Gandhi National Open University
   - (vii) Chairman, Central Social Welfare Board
7. 31 nominated members representing various categories.
8. **Permanent Invitees**
   - (i) Secretary, Department of Culture
   - (ii) Secretary, Department of Arts
   - (iii) Secretary, Department of Youth Affairs and Sports
   - (iv) Secretary, Department of Women and Child Development
   - (v) Secretary, Department of Science and Technology
   - (vi) Secretary, Ministry of Welfare
   - *(vii) Secretary, Planning Commission*
   - (viii) Secretary, Department of Labour
   - (ix) Secretary, Ministry of Industrial Development
   - (x) Chairman, Electronics Commission
   - (xi) Special Secretary, Department of Education,
   - (xii) Additional Secretary, Department of Education
   - (xiii) Educational Adviser (Technical), Department of Education
   - (xiv) Adviser (Education), Planning Commission
   - (xv) Director, Directorate of Adult Education.
9. Education Secretary — Member Secretary

Members other than Ex-officio members will hold office for three years.

It has also been stipulated that the Board will meet at least once every year and there shall not be a gap of more than two years between two consecutive meetings of the Board. □

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

SENIOR RESEARCH FELLOWSHIP/RESEARCH ASSOCIATESHIP

(Advertisement No. SRF/RA-EMR-I/86)

Applications are invited from Indian Nationals by the Council of Scientific and Industrial Research, Rafi Marg, New Delhi for the award of Senior Research Fellowship/Research Associateship in all the subjects of Science and Technology including Engineering and Medicine. These will be tenable at Universities, Institutes of Technology, Medical Colleges/Institutes, Centres of Advanced Studies, CSIR Laboratories and other Research/Academic Institutions. Preference will be given to the topics relevant to R and D Programmes of CSIR Laboratories, new and emerging fields in each scientific discipline and areas of national importance of Science and Technology. Good academic record at the University level, the research papers published in the standard journals and the topic of research to be undertaken will be the main criteria for selection. The Fellowships/Associateships will be subject to CSIR terms and conditions applicable from time to time.

SENIOR RESEARCH FELLOWLSHIP IN SCIENCE SUBJECTS (Stipend Rs. 1200/- p.m.)

QUALIFICATION : Applicants should have M.Sc. or equivalent degree with at least 2 years research experience after M.Sc. as evidenced by published papers in standard journals.

SENIOR RESEARCH FELLOWSHIP IN ENGINEERING AND MEDICINE (Stipend Rs. 1200/- p.m.)

QUALIFICATIONS : Applicants should have M.E./M. Tech. in engineering or equivalent degree in Engineering and Technology or M.B.B.S. after completing internship.

TENURE : The tenure of an SRF in Science Subjects will be 2 years extendable by one year. The tenure of an SRF in Engineering and Medicine will be two years extendable by a further period of two years if at the end of 2 years his/her work is found satisfactory by an assessment committee consisting of guide, head of the Department and an external expert of the rank of Professor in the relevant field.

AGE : The upper age limit for Senior Research Fellowship is 30 years as on 1.4 1986 (relaxable by three years for Scheduled Castes and Scheduled Tribes). In exceptional cases where a candidate is found to have outstanding ability, the age limit may be relaxed marginally at the discretion of CSIR.

Those who have held or are holding fellowships, getting identical stipend may also apply but if selected they will be subject to the additional condition that their tenure as SRF together with such tenure of fellowship held earlier does not exceed 3 years in Science subjects and 4 years in Engineering/Medical.

RESEARCH ASSOCIATESHIP :

QUALIFICATIONS : The applicants should have minimum Ph.D. or equivalent degree or M.D./M.S.; or three years research, design and development experience after M.E./M. Tech. or equivalent degree in Engineering and Technology.

AGE : The upper age limit is 35 years as on 1-4-1986 (relaxable by three years for Scheduled Castes and Scheduled Tribes). Marginal relaxation in the period of R & D experience after M.E./M. Tech. Age relaxation may be considered for candidates having outstanding ability at the discretion of CSIR.

TENURE : The selected candidates will get monthly stipend in the range of Rs. 1400/- to Rs. 2000/- per month (fixed) for a period not exceeding five years with the provision of annual increase of Rs. 100/- as per rules.

CSIR reserves the right to place the selected candidates at any place considered suitable for the work other than the place from where the application has been forwarded.

HOW TO APPLY : Application forms for the Fellowship/Associateship awards will be available from 21.4.1986 and may be obtained from the Under Secretary EMR, CSIR, Rafi Marg, New Delhi - 110001. Request for application form must be accompanied by a self-addressed envelope of the size of 15 cm x 25 cm (5½" x 9") with stamp of Re. 1/- affixed on it. Both the envelopes must be superscribed with "APPLICATION FORM FOR SRF OR RA" as the case may be. The form can also be obtained personally from CSIR Office at Rafi Marg, New Delhi with a formal request. Application complete in all respect duly sponsored by the authorities of Institutes/Universities/Research Laboratories (where the candidate proposes to undertake research) alongwith copies of research papers, attested true copies of all relevant certificates, mark-sheets and testimonials (originals need not be sent) and a crossed Indian Postal Order of Rs. 10/- drawn in favour of Joint Secretary (Administration) CSIR, payable at New Delhi Post Office should be sent by Registered Post addressed by name to Shri S.N. Rai, Under Secretary, EMR, CSIR, Rafi Marg, New Delhi - 110001. The Scheduled Castes/Tribes and the Physically Handicapped candidates are exempted from payment of application fee. Incomplete applications or applications received after closing date will not be considered. Last date for receipt of applications is **30-6-1986** (for remote areas **10-7-1986**).

NOTE : ALL THE PAPERS OF THE APPLICATION MUST BE STITCHED BY THREAD OR TAG BEFORE POSTING TO RETAIN THEM TOGETHER. THE ENVELOPE CONTAINING THE APPLICATION MUST BE SUPERSCRIBED WITH "APPLICATION FOR "SRF" OR "RA" AS THE CASE MAY BE. NO APPLICATION WILL BE ENTERTAINED AFTER THE LAST DATE IS OVER. NO INTERIM ENQUIRIES WILL BE ATTENDED TO. CANVASSING IN ANY FORM WILL BE A DISQUALIFICATION.

System Sciences and Biology

A UGC sponsored all-India symposium on 'System Sciences and their Applications to Biology' was recently organised by the School of Studies in Mathematics, Jiwaji University. Dr. J.N. Kapur of IIT, Kanpur, who inagurated the symposium, highlighted the urgent necessity of use of system sciences in future biological researches. Citing various examples from as diverse fields as demography and computation of total length of capillaries in a human body, he established the effectiveness of mathematical modelling in study of a biological system.

Prof. Kapur covered in his presentation the whole range of studies classified as Bio-Mathematics. Taking up problems from Bio-genetics, Bio-economics, Ecology, Biodynamics, Physiology, Mathematical Zoology, etc., he demonstrated how and why use of Mathematics had become indispensable in studying them. Major mathematical techniques which have been employed are: Classical Mathematical technique, Probabilistic and statistical technique, Computer and Statistical technique, Operations research technique, and Modern Mathematical technique.

He also dealt with Microbial kinetics, Integro-differential equation models on age structure of population and some optional exploitation models for renewable biological resources.

The second of the series of invited lectures was delivered by Dr. B.R. Bhonsle, former Vice-Chancellor, Marathwada University and Member, Maharashtra Public Service Commission. Drawing on his researches on Special Functions, he spoke on 'Hermite and Jacobi solutions of Heat Conduction Problems'. His researches have been found useful in study of problems relating to human skin. Prof. M. Dutta, formerly at Calcutta University, in his lecture discussed 'Maximum Entropy Method of Estimation and its relevance to Biology'. Tracing the origin of this method to the study of stochastic foundation of physical statistics, he described its inter-relation with other methods of estimation in the theory of statistical inference. He brought out the relevance of this method to the study of biological problems. 'Use of mathematical modelling in epidemiology' was the subject of the lecture delivered by Prof. J.B. Shukla of I.I.T. Kanpur. Taking into account various parameters he discussed a finite population under the effect of an infectious disease. He also built some new models using the susceptibilities of a biological population in the presence of infectants. Prof. V.P. Saxena, Head, School of Studies in Mathematics, Jiwaji University, and Director of the Symposium, dwelt upon the systems approach to human physiological heat transfer problems. Examining the role of human dermal parts in thermoregulatory system, he proposed a global approach that would incorporate effects of variation in the environmental conditions as well as internal mechanism.

Besides invited lectures, a number of research papers were presented by the participants during the academic sessions of the symposium.

Ethiopian delegation visits JNU

A 5-member team from Ethiopian Science and Technology Commission, Addis Ababa, visited Jawaharlal Nehru University. The purpose of the Ethiopian team's visit was mainly to study the mechanisms of S & T planning in India, organization, financing and administration, training and development of S & T services, organization of education system, the role of Academics, S & T societies, etc. The team was headed by Mr. Kebede Tessema, head of the Construction and Urban Development Department and included Dr. Debrewor Zewdie, Head of the Immunology Department and Acting Director-General, Manager, National Research Institute of Health, Dr. ING. Soloman Alemu, Associate Professor and Head of Civil Engineering Department, AAU (Hydraulic Engineer), Mr. Berhane Worku and Mr. Awoke Aynalem, Head of the Agricultural Development Department in the Ministry of Agriculture.

The team members also called on the Vice-Chancellor Prof. P.N. Srivastava who explained to them the functioning of the University and various Programmes of Studies in Science. The team members also visited the Schools of Environmental Sciences and Life Sciences and went round different labs to know about the research facilities available there.

Jadavpur Varsity plans new courses

The Jadavpur University, Calcutta, it is reported, proposes to introduce a 3-year B.Sc. (Sports) degree course and a four-year course in Printing Technology under the Engineering faculty of the University. A proposal to this effect has already been submitted to the University Grants Commission (UGC).

According to the Vice-Chancellor, Dr. Sankar Sen, the University also proposes to start an M. Phil. course in Environmental Science. It would also introduce Computer Aided Instruction programmes in the undergraduate course of Science and Engineering from this year.

SNDT to offer computer courses

The SNDT Women's University, Bombay, proposes to start a full-time postgraduate course and short-term courses in Computer Science at its Sir Vithaldas Vidyavihar campus. A full-fledged Department of Computer Science is reported to have been set up for the purpose.

XI World Congress of Sociology

The International Sociological Association proposes to hold the XI World Congress of Sociology in New Delhi from August 18-22, 1986. This quadrennial session of the Congress, first to be held in an asian country, is being hosted by the Indian Sociological Society. The Congress is likely to hold about 500 sessions of symposia and the research committees at which over 2500 research papers will be read.

Over 3500 delegates, including 2500 foreign, are expected to participate in the deliberations of the Congress. A book exhibition is also proposed to be organised on the occasion.

New programmes for Bharathidasan Varsity

The Bharathidasan University proposes to start a two-year Master Degree course titled "Applicable Mathematics and Computer Science" from the next academic session. The University also proposes to establish a Centre for Biotechnology and strengthen the School of Social Sciences. Plans are afoot to conduct a state wide survey to develop a data base on the manpower available and research potential in Social Science area.

UGC assistance for computer centre

The University Grants Commission (UGC) has sanctioned a sum of Rs. 25.3 lakhs to Bharathidasan University for setting up a computer centre. The University proposes to instal 32 BIT computer which would be used for university research, manpower training, postgraduate education and research in computer hard and software and for extension work with industry.

Two Registrars for Bihar Varsities

The Bihar Government, it is reported, proposes to appoint two Registrars for each University in the State. While IAS Registrar will look after the administrative work including law and order on the campus, the other Registrar will be put incharge of the academic affairs of the University. Such a need, it is further reported, is being felt for smooth functioning and improving law and order in different universities of the State.

Higher retirement age for teachers

The Bihar Government is reported to have taken a decision to raise the retirement age of university and college teachers. According to the new decision, the university and college teachers will now retire at the age of 62 years instead of 60 years.

We Congratulate...

(1) Shri Kirpa Narain, Vice-Chancellor, G.B. Pant University of Agriculture and Technology, Pantnagar, who has been elected President of the Indian Agricultural Universities Association for the year 1986-87.

(2) Dr. (Miss) Mehroo Dhunjishah Bengalee who has been appointed Vice-Chancellor of the University of Bombay.

News from Agril. Varsities

Sir Chhotu Ram Memorial Lecture

Dr. J.S. Kanwar, Director of Research, International Crop Research Institute for Semi-Arid Tropics (ICRISAT), Hyderabad delivered the first Sir Chhotu Ram Memorial Lecture at the Haryana Agricultural University, Hissar. He observed that the imbalanced growth and inequity in the production of oilseeds and pulses including bajra, rapeseed, mustard and groundnut has been a matter of great concern to the agricultural scientists. He said that since the green revolution has by-passed dryland agriculture, the traditional crops of Haryana have not shown the improvement as compared with the important crops in the irrigated areas like rice, wheat, cotton and sugarcane. The need of the hour, therefore, is a green revolution in millets, pulses and oilseeds production in the dryland areas of Haryana.

Dr. Kanwar strongly advocated the establishment of centres of vegetables, fruits, dairy, poultry and piggery production within a radius of 100 kilometers of Delhi in the Haryana State and use of modern methods of production and marketing. This diversification and specialisation of agriculture will pay great dividends to the farmers of the state.

Stressing the need of education for the rural women, he said that training of women in modern agriculture would help in achieving a breakthrough in the now-stagnant agricultural situation in Haryana. He also wanted the University to introduce vocational training programme for the youth to enable them to tackle farming problems.

Shri L.D. Kataria, Vice-Chancellor, Haryana Agricultural University, who presided over the function said that Sir Chhotu Ram visualised the problems of the farming community and inspired them to stand against the tyranny and pressure of the moneylenders and landlords. The legislative measures enacted by him bear testimony to his deep interest in the rural poor and it is in this context that the services of Sir Chhotu Ram would always be remembered.

River of Honey

Punjab Agricultural University (PAU), has produced its first one-hour video film titled, 'River of Honey'. The film narrates the success story of a marginal farmer who could hardly live on a meagre income derived from his two-acre farm. But, when on the advice of the PAU scientists he started bee-keeping profession, fortune smiled on him and he is quite well off now.

The film produced by the Communication Centre with the active collaboration of the Department of Entomology is directed by Amarjit Singh Grewal while Janmeja Singh is the man behind the camera.

With two audio cassetts, one each on the cultivation of wheat and cotton produced earlier, PAU has shown the way how modern electronic media can be harnessed for the transfer of latest farm technology and used as an effective instrument of rural development.

New crop varieties

The Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, has released various crops varieties for cultivation in Madhya Pradesh. These varieties include : Jawahar Lin-Seed-23 and Jawahar Saffiower-1; Jawahar Urd-2 (RU-2) and Jawahar Urd-3 (RU-3); Jawahar Gram-74; (Aphim)-16 (MP 78/16); Jawahar Cotton (Kapas-3); (Khandwa-3); Jawahar Fababean-1 and 2; Jawahar Kutki-2; Sweet Potato-JB-145; Jawahar Moong-131 (ML-131); Jawahar Soyabean 75-46 (Avani); Jawahar Soyabean-76-204 (Shyam); Jawahar Dhan-75 (Sheeghra); Jawahar Mirch-218 (J-218); and Jawahar Pea-179 (Indu).

REGIONAL ENGINEERING COLLEGE
SRINAGAR-190006
invites applications for admission to
M. E. Course in Water Resources Engineering
of 1½ years duration commencing in July 1986

Introduction of the course has recently been approved and supported by Ministry of Human Resource Development, Government of India.

SEATS : 10 (Maximum of five seats may be offered to in-service candidates sponsored by State Governments and other institutions if they satisfy the selection criteria). Admission to the remaining seats will be made on the basis of Graduate Aptitude Test Examination results. Sponsored candidates can apply for admission to M.E. Course without appearing for the GATE examination.

ELIGIBILITY : A bachelor's degree in Civil Engineering or an equivalent recognised degree with not less than 60% marks (not less than 55% marks in case of candidates belonging to SC/ST classes).

SCHOLARSHIPS : Five scholarships each of value Rs. 1,000/- per month will be available only for those candidates who have qualified through GATE.

APPLICATION FORMS for admission can be had from the office of P.G. Course in Water Resources on working days against payment of Rs. 5/- (non-refundable) by crossed Indian Postal Order drawn in favour of Registrar of the College upto **May 19, 1986**. Request for admission form by post should also accompany a self-addressed envelope of size 18 x 24 cms bearing Rs. 3.25 postage stamps.

LAST DATE FOR RECEIPT OF COMPLETED APPLICATION FORMS ENCLOSED WITH I.P.O. FOR Rs. 7/- (Registration fee) drawn in favour of the Registrar is **June 10, 1986**.

PRINCIPAL

News from UGC

INSAT-1B Programme of UGC

Between 16th and 23rd May, 1986 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

16-5-86

"Computer aided Instructions"
"Industrial Technology of Japan"
"Transport : A Contour of the Future"

17-5-86

"Chemical Families"
"Water Management"
"Biological Sciences'

18-5-86 (Sunday)

No Telecast

19-5-86

"Chemistry of Dyes"
"Past in Perspective"
"Crystals and their Structure"

20-5-86

"View from Space-I"
"Of Mind and Matter"
"Art in Metal"
"Wine College"

21-5-86

"View from Space-II"
"Present Perfect Tense"
"Computer Storage"

22-5-86

"Prescription for Health"
"Waste Lands in India"
"Preservation of Environments"

23-5-86 (Sunday)

No Telecast

LATEST REFERENCE PUBLICATION

UNIVERSITIES HANDBOOK—1985-86

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* Names of Professors and Readers/Assistant Professors together with their academic titles department-wise;
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—Introductory chapter on overview of the University system in India.

—Map showing location of universities.

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ASSOCIATION OF INDIAN UNIVERSITIES
AIU HOUSE, 16 Kotla Marg, New Delhi-110002
Telephones : 3310059, 3313390, 3315105, 3312305, 3312429

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
May 8-10, 1986	National Seminar on Interaction between research in Universities and Industries	To identify the industries where University research can play an important role and find out ways and means of active interaction between research in Universities and Industries	University of Delhi, Delhi	Dr. Yogesh Kumar Department of Physics, and Astrophysics, University of Delhi, Delhi
May 13-31, 1986	Orientation Programme on better utilization of irrigation resources	To acquaint the participants with the processes and problems relating to irrigation schemes, water management, rehabilitation, etc.	Centre for Social Studies, South Gujarat University, Surat in collaboration with Deptt. of Economics, M.S. University of Baroda	The Course Director, Centre for Social Studies, University Campus, Surat
May 19-24, 1986	Refresher course for practitioners in psychiatric social work	To acquaint the faculty members with advances in psychiatric social work.	National Institute of Mental Health & Neuro-Sciences, Bangalore	The Director, NIMHANS, P.B. No. 2900, Bangalore
May 19-June 1, 1986	Summer School on Crystal Growth and Characterisation of Advanced Materials for Solid State Applications	An orientation course in (i) Experimental Crystal Growth; (ii) Theories of Crystal Growth; (iii) Nucleation; and (iv) Characterisation	Crystal Growth Centre, Anna University, Madras	Dr. P. Ramasamy, Crystal Growth Centre, Anna University, Madras
May 26-June 21, 1986	Summer School in Analysis and Probability	Topics covered are : Probability theory and Stochastic processes; Fourier analysis on R^n; and Functional analysis.	Indian Statistical Institute, Calcutta	In-charge, Summer School 1986, Stat-Math Divn., Indian Statistical Institute, Calcutta
June 5-28, 1986	Summer Institute on Application of Synthetic Harmones, Pheromone and Reproduction Inhibitors in Insect-Pest Management	To expose the participants to the recent advances in Applied Entomology in the Integrated Pest Management Programmes	Department of Entomology, University of Agricultural Sciences (UAS), Bangalore	Dr. K.C. Devaraj Urs, Prof. of Entomology, College of Agriculture, UAS, G.K.V.K., Bangalore
July 7-18, 1986	Short-term training programme on Abstracting and Indexing	Application of abstracting and indexing methods, use of vocabularies in indexing, construction of indexing language (thesaurus) for information system	National Institute of Small Industry Extension Training, Hyderabad	Mrs. K. Subhashini, Course Director, NISIET, Yousufguda, Hyderabad
September 13-15, 1986	National Solar Energy Convention 1986	To evaluate the current status and trends in solar energy studies; to evolve methodology for collaboration among researchers and industrialists; and to identify technologies for harnessing renewable energy sources	School of Environment and Natural Resources, Madurai Kamaraj University, Madurai	Prof. T. M. Haridasan, Organising Secretary, Natural Solar Energy Convention—1986 School of Energy, Environmentand National Resources, Kamaraj Madurai University, Madurai-625021
October 1-4, 1986	Third National Conference on Women's Studies	To promote the development of Women's Studies in India by providing a forum for interaction amongst individuals, institutions and organisations engaged in teaching, research or action for women's development.	Indian Association for Women's Studies, New Delhi in collaboration with Panjab University, Chandigarh.	Dr. Lucy Jacob, General Secretary, IAWS, L-3-D, University Campus, Jaipur.

Ministry of Personnel Public Grievances and Pension

Department of Personnel & Training

Assignment of India Experts Abroad

The Department of Personnel and Training registers experts who are desirous of taking up assignments in the developing countries of Asia, Africa and Latin America for a period of two to three years. Candidates so registered are sponsored in their turn in the panels as and when demands suited to their qualifications and experience are received from foreign governments. However, empanelment in the roster of experts does not enjoin upon the applicant right to be sponsored for a foreign assignment as sponsorship will depend on the receipt of sufficient number of suitable demands from abroad in relevant fields.

Applications for registration are invited from:

(a) Medical Personnel holding at least MBBS Degree or its equivalent;

(b) Engineering and other technical personnel holding at least bachelor's degree or equivalent;

(c) Teachers in different subjects holding a B.Ed degree or equivalent;

(d) College/University lecturers and other academic personnel/holding post-graduate qualifications; and

(e) Chartered Accountants, Cost Accountants, Company Secretaries, Statisticians, Economists, SAS Accountants; Librarians and others possessing qualifications equivalent to at least bachelor's degree and relevant professional experience in the field of specialisation. Persons who possess a general Bachelor's/Master's degree like BA/MA, etc. but do not possess experience of a specialised nature will not be registered, e.g. persons working at clerical levels are not eligible for registration.

Persons with less than three years professional experience after obtaining the requisite qualifications need not apply.

Persons who have attained the age of 60 years need not apply. Applications of persons registered earlier will also not be considered after they attain the age of 60 years.

Experts wishing to be registered on the foreign assignment panels may obtain the necessary forms for Rs. 5/- each from the Sale Depots/Counters of the Departments of Publications, Government of India, Publication branches of the State Governments/ Union Territories and Prominent Private Agents authorised to sell Government Publications all over India. Those interested in obtaining the forms by post on pre-payment basis can have from Department of Publications, Ministry of Urban Development, Civil Lines, Delhi - 110054. In no case the postal orders/money orders, etc. should be sent to this Department for obtaining the FAS Forms.

Applications from persons employed by the Central or State Governments, Public Sector Undertakings, Universities and Quasi-Governmental Organisations under Central/State Government should be submitted through proper channel. The Administrative authorities forwarding the application forms for registration are also advised to record on the forwarding letter itself a statement to the effect that the individual concerned thereof has/has not been on foreign assignment and the period should also be mentioned in case the applicant had already been on foreign assignment for five years or more, his application form should not be forwarded to the F.A. Section, Department of Personnel and Training for registration unless he has given a written undertaking to resign/retire, if eligible to do so, in case of his selection for foreign assignment. This fact should also be mentioned in the forwarding letter. In counting five years, foreign assignment, held earlier under ITEC Programme or in countries like Bhutan, etc. where remunerations are paid on same basis as under ITEC Programme should be excluded.

Registration is valid for a period of three years only from the date of registration. Candidates, whose registration has lapsed should, if so desired, apply afresh on the prescribed priced form. Since renewal of registration is not admissible under the rules, re-registration will be always reckoned as fresh registration.

davp 561(759)85

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month' while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research scholars and students of education are welcome to use these resources. The Library is open from 9-30 a.m. to 5-30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Philosophy

1. Lalitha Kumari, Pakerla Padma. *Theories of categories in Indian Philosophy.* Andhra U, Waltair.

Language and Literature

English

1. Balasubramanian, M. *Time and self in the novels of Virginia Woolf.* Madurai Kam U.
2. Banerji, Suman. *Theme and technique in the short stories of Katherine Mansfield,* 1888-1923. HS Gour, Sagar.
3. Jain, Naresh Kumar. *The theme of love in modern American drama with particular reference to O'Neill, Williams, Miller and Albee.* U Delhi.
4. Manohar Singh. *Christopher Caudwell : An assessment of the Marxist critic.* APSU, Rewa.
5. Rengaswamy, R. *A critical study of Shakespeare in Tamil translation.* Madurai Kam U.
6. Sahayam, John. *Indo-Anglian writers.* Madurai Kam U.
7. Singh, Pramod Kumar. *Social consciousness in R.K. Narayan's novels.* Mag U, Bodh Gaya.

French

1. Jani, Maya. *Tentative D'approache integree dang L enseignment du Roman a parti des lialsons dangerenses.* JNU, Delhi.

Sanskrit

1. Bharadwaj, Om Prakash. *Studies in indology. D. Lit.* Pb U, Chandigarh.
2. Bhaskar, Gorinath Mishra. *Mahamohopadhyaya Mukundraj Jhavashi : Vyktitva evam krititva.* KS Darbhanga.
3. Chandna, Urmil. *A critical study of Prasannaraghava of Jayadeva.* Pb U, Chandigarh.
4. Jha Dev Narayana. *Vaiyakaran sidhanth kamudhyabhavad prakarnprayant dash prakanamalochanatmakmadhyayanam.* KS Darbhanga.
5. Jha, Shankarji. *Vykaran sidhant laghumnajushaya: Bhasha vaigyanikkamhhyayanam.* KS Darbhanga.
6. Jha, Sita Charan. *Matantrasmeeksha poorvakanipata nodhyotakatva vachakatvanyantra vyavsthapnam.* KS Darbhanga.
7. Jha, Swaranarayana. *Nakshatravigyanam.* KS Darbhanga.
8. Joshi, D.K. *Balmiki Ramayana mein bimb vidhan.* Kum U, Nainital.
9. Kusmakar. *Mahakavi Bhaumik krit Ravanurjuniya Mahakavya: Ek sameekshatmak adhyayan.* Avadh U.
10. Nain, Raj Pal. *Manusmriti mein rajdharam.* Pb U, Chandigarh.
11. Narayana, Surendra Pratap. *Vasudeva krit Yudhishthar ka elochanatmak adhyayan.* Avadh U.
12. Sharma, Ajay Kumar. *Rasayan vajikaram: Shastriya evam viaynik adhyayan.* KS Darbhange.
13. Sharma, Chanchal Kumar. *Kaumarbhutyantragat balgrahon ka kramik evam vaigyanik adhyayan.* KS Darbhanga.
14. Sharma, Gokul Chand. *A critical study of Goraksasamhita.* Pb U, Chandigarh.
15. Sharma, Savita. *A study of the Mahabhasydipika.* U Delhi.
16. Tripathi, Shripati. *Kalidas kee kritiyon mein dharamshastriya vishaya.* KS Darbhanga.

Punjabi

1. Balgir, Kamaljit Kaur. *New experiments in Punjabi drama,* 1960-1980. Pb U, Chandigarh.

Hindi

1. Chandrangadan, A.R. *Kerala mein Hindi siksha ka vikas aur Malayalam bhashi chhatron kee samasyayen.* U Cochin.

2. Gupta, Usha Rani. *Sathottari Hindi natakon mein parampara aur prayog*. SPU, Vallabh Vidyanagar.

3. Lakshmi Kumari, Chayanam. *Social consciousness in proseliteratures during the period of Bharatendu Harishchandra and Kandukuri Veeresalijgam.* Andhra U.

4. Pathak, Pramod. *Bundeli gadya ka vikas*. APSU, Rewa.

5. Rama Shankar. *Tulsi kavya mein lok chetana.* Avadh U.

6. Sangam, Mahantappa Ningappa. *A comparative study on Kabir and Shishunal Sharif.* Kar U, Dharwad.

7. Sawkar, Hemalata Damodar. *Upanyaskar Hajariprasad Dwivedi.* Kar U, Dharwad.

8. Singh, Neelima. *Maharaja Digvijaya Singh : Ashrayadata evam kavi.* Avadh U.

9. Yadav, Kamla. *Acharya Ramchandra Shukla aur Bharatiya kavya shastra kee parampara.* JNU, Delhi.

Urdu

1. Fahmida Khatoon. *Women characters in the novels of Krishan Chandra.* U Calcutta.

2. Mohammad Hafizullah Newalpuri. *Development of Urdu in Orissa.* JNU, Delhi.

3. Usmani, Uzra Rana. *Female characters in Urdu mathnavis.* U Calcutta.

Bengali

1. Basistha, Susil Kumar. *Sri Krishna in Bengali literature during the period of* 1800-1950 *A.D.* U Calcutta.

2. Chakrabarti, Nihar Kana. *Kavya O sangite Banglar kavipanchak Rabindranath, Dwijendralal, Rajanikanta, Atulprasad O Nazrul Islam.* U Calcutta.

3. Das, Dolgobinda. *Kanthi Mahakumar kathya bhasar rup-o-riti.* RBU, Calcutta.

4. Das, Krishna. *Bangla Bhasatatva charchar dharao-Rabindranath.* RBU, Calcutta.

5. Ghosh, Tapabrata. *Rabindra Chhotogalper shilparup.* U Calcutta.

6. Mahmuda Khanam. *Madhyajuger Bangla sahitya : Hindi Sufi Kabye prabhab.* U Calcutta.

7. Mohammad Abdul Jalil. *Madhyayuger Bangla sahityer samajik patabhumika: Samikhya punarbichar.* U Calcutta.

8. Mukhopadhyay, Bhaskar. *Sanjib Chandra Chattopadhyay: Jiban-o-sahitya.* RBU, Calcutta.

9. Pal, Nimaichandra. *Rabindra natake rupak sanketic angik.* U Calcutta.

10. Poddar, Dipak Chandra. *Bangala theatre: Dwitiya viswayodhhottara samajik-o-rajnaitik natak.* RBU, Calcutta.

Oriya

1. Sahu, Braja Kishore. *A study of the theme of Lord Jagannath in the Dardhyatabhakti.* Utkal U.

Tamil

1. Kalaiselvi, A. *Avvaiyaar and ethical literature in Tamil.* U Delhi.

2. Meena, T.R. *Sarneethaya Pinnaniyil Vattara pultinavgul.* Madurai Kam U.

Kannada

1. Purohit, Mandakini Anantarao. *Shrimati T.K. Indira Avara Kadambarigalu.* Kar U, Dharwad.

2. Ramesesban, N.K. *Haridasa Chaluvali ondu adhyayana.* U Bangalore.

Telugu

1. Rama Rao, K. *Syntax of Koya language.* OU, Hyderabad.

2. Thirmal Rao, R. *Telangana Rytanga poratam: Goya racchanalu.* OU, Hydetabad.

Geography

1. Chattopadhyay, Srikumar. *A regiohal analysis of the Littoral Region of the* 24 *Parganas of West Bengal.* U Calcutta.

2. Dalvi, A.S. *Geographical perspective on habitat, economy and politics of Kurdish area.* JNU, Delhi.

3. Mishra, P. *Katanig ka nagariya bhoogol.* APSU, Rewa.

History

1. Bhagat, Bankim Bihari. *The scientific-technological revolution in the Soviet Union : A study of its impact on the Soviets and the CPSU,* 1959-1980. JNU, Delhi.

2. Chattopadhyaya, Atri Kumar. *Administration of criminal Justice in the Bengal Presidency in the second half of the nineteenth century : A study of popular reaction to the codification of criminal legislation in rural and urban centres.* U Calcutta.

3. Chattopadhyay, Subid. *History of archaeology of Arunachal Pradesh.* U Calcutta.

4. Gupta, Matadin. *Political participation in the USSR : A study of the CPSU and the Soviets,* 1965-1980. JNU, Delhi.

5. Panigrahi, Prahallad Charan. *British policy towards Sambalpur during 19th century.* Sambalpur U.

6. Padmavathi, G.S. *Gajaprastha style of temple architecture in Tondaimandalam.* Utkal U.

7. Palit, Bipradas. *Chalcolithic cultures of Madhya Pradesh.* Vikram U, Ujjain.

8. Shiela Rani. *Indian public opinion and the crisis in the British Empire : A study of the formation of public opinion concerning the Boer War,* 1899-1902, *Boxer uprising,* 1900 *Russo-Japanese War,* 1904-5 *and Balkan wars* 1912-13. U Delhi.

9. Shrivastava, Sushil Kumar. *Samajik, dharmik pravritiyon evam Baudh Dharma ka udaya.* Avadh U.

ADDITIONS TO AIU LIBRARY

Adiseshiah, Malcolm S., ed. *Science and technology for women.* Madras. Affiliated East-West Press, 1984. 79p.

Aggarwal, J.C. *National policy of education* 1985 : *A framework.* Delhi, Doaba House, 1985. vi, 103p.

Ahmed Abdalla. *Student movement and national politics in Egypt,* 1923-1973. London, Alsaqi Books (c 1985) 285p.

Argyle, Michael and Henderson, Monika. *Anatomy of relationships: And the rules and skills to manage them successfully.* London, Heinemann, 1985. 359p.

Barnes, Barry. *About science.* Oxford, Basil Blackwell, 1985. 163p.

Baron, Jonathan. *Rationality and intelligence.* London, Cambidge University (c 1985) viii, 299p.

Biggs, May, ed. *Publishers and librarians : A foundation for dialogue.* Chicago, University of Chicago (c 1984) 106p.

Boulding, Kenneth E., ed. *Economics of human betterment.* London, Macmillan (c 1984) xiii, 220p.

Burgess, Robert G., ed. *Issues in educational research: Qualitative methods.* London, Falmer Press, 1985. 289p.

Chakraborty, Krishna. *University student: Background profile and stance.* Calcutta, K.P. Bagchi, 1985. vii, 115p.

Craig, John E. *Scholarship and nation building : The Universities of Strasbourg and Alsatian Society* 1870-1939. Chicago, University of Chicago (c1984) xii, 515p.

Datta, Ansu. *Education and society : A sociology of African education.* London, Macmillan (c1984) vii, 213p.

Desai, Neera and Patel, Vibhuti. *Indian women: Change and challenge in the international decade* 1975-85. Bombay, Popular, 1985. 101p.

Fancher, Raymond E. *Intelligence men : Makers of the IQ controversy.* Newyork, Norton (c1985) 269p.

Ferruolo, Stephen. *Origins of the university: The schools of Paris and their critics* 1100-1215. California, Stanford University Press 1985. 380p.

Gustavasson, Bengtove and others, ed. *Work in the 1980s: Emancipation and derogation.* Vermont, Gower (c1985) vii, 262p.

Hare, William. *Controversies in teaching.* London, Althouse Press (c1985) vii, 139p.

Hetland, Atle, ed. *Universities and national development.* Sweden, Almqvist and Wiksell (c1984) 173p.

Hetland, Atle and Ishumi Abel G.M. ed. *Educational planning in developing countries.* Sweden, Almqvist and Wiksell (c1984) 192p.

Inglis, Fred. *Management of ignorance : A political theory of the curriculum.* Oxford, Basil Blackwell (c1985) 215p.

Kesavan Bellary Shamanna. *History of printing and publishing in India : A story of cultural re-awakening.* V. I. Delhi, National Book Trust, 1984. xxxi, 461p.

Kuper, Adam and Kuper, Jessica, ed. *Social science encyclopedia.* London, Routledge and Kegan, 1985. xxvii, 916p.

Mathews, John C. *Examinations : A commentary.* London, George Allen and Unwin (c1985) 258p.

Meister, David. *Behavioral analysis and measurement methods.* New York, Wiley (c1985) 509p.

Sangma, Milton S. *History of education in Garo Hills.* Guwahati, Spectrum, 1985. vi, 103p.

Sergiovanni, Thomas J and Corbally, John E., ed. *Leadership and organizational culture : New perspectives on administrative theory and practice.* Chicago, University of Illinois Press (c1984) x, 339p.

Shulman, Valerie L., ed and others. *Future of Piagetian Theory: The Neo-Piagetians.* New York, Plenum Press (c1985) lxv, 222p.

Stubbs, David R. *How to use assertiveness at work.* Vermont, Gower (c1985) xviii, 145p.

Verma, Lokesh K. *Innovation for examination reform.* Jammu Tawi, Jay Kay Book, 1985. 120p.

Youniss, James and Smollar, Jacqueline. *Adolescent relations with mothers, fathers and friends.* Chicago, University of Chicago, 1985. viii, 201p.

INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

invites applications for

Research Assistants and Research Associates

The Candidates will function in the following areas:

Business Policy, Economics, Finance and Accounting, Marketing, Organizational Behaviour, Personnel and Industrial Relations, Production and Quantitative Methods, Centre for Management in Agriculture and Public Systems Group.

Duties and Responsibilities

To provide assistance in teaching material preparation, evaluation of assignments, conducting tutorials, research support in research projects, and other related academic tasks.

Qualifications

Minimum requirement would be a Bachelor's degree in Engineering/Technology and/or a Master's degree in the relevant field. Candidates should have a consistently good academic record and those with less than 50% marks in Bachelor's and Post-graduate degrees need not apply. Appointment will be made in either Research Assistant or Research Associate scale depending on qualification and experience.

Pay Scale

Research Assistant : Rs. 550-25-750-EB-30-900. (Total emoluments at the minimum of scale Rs. 1,657.40) Research Associate: Rs. 700-40-900-EB-40-1100-50-1300 (Total emoluments at the minimum of scale Rs. 2,102.90).

Allowances

Dearness, House Rent and City Compensatory Allowance, Medical and Leave Benefits, etc. according to IIMA rules.

Maximum Age Limit

30 years as on April 1, 1986 (35 years for SC/ST Candidates). The recruitment is subject to Government of India orders for reservation of posts for SC/ST candidates. Age and qualifications are relaxable in exceptional cases. Appointments are initially for one year, but may be extended upto 3 years and beyond based on the performance of the candidates and needs of the Institute.

Please send your requests for the application form to the Establishment Officer, Indian Institute of Management, Vastrapur, Ahmedabad-380 015 within 15 days of this advertisement enclosing a postal order for Rs. 5/- (not required for SC/ST candidates) in favour of Indian Institute of Management, Ahmedabad. Completed application form must be received latest by May 31, 1986.

LINTAS IIMA P50 282

INDIAN INSTITUTE OF ADVANCED STUDY
Rashtrapati Nivas, Shimla-171005

Advertisement No. 2/86

Applications in the prescribed form are invited for the award of Fellowships for the year 1986-87 from candidates possessing a Doctoral Degree of a recognised Indian or Foreign university or convincing evidence of ability to carry on independent study and research at advanced level for carrying out research on the following topics:

(a) Social, Political and Economic Philosophy;
(b) Comparative Indian Literature (including Ancient, Medieval, Modern Folk and Tribal);
(c) Comparative Studies in Philosophy and Religion;
(d) Development of World-views;
(e) Education, Culture, Arts including performing Arts and Crafts;
(f) Fundamental Concepts and Problems of Logic and Mathematics;
(g) Fundamental Concepts and Problems of Natural and Life Sciences;
(h) Studies in Environment—Natural and Social;
(i) Indian Civilization in the context of Asian Neighbours;
(i) Problems of Contemporary India in the context of National Integration and Nation-building; and
(k) Computer laws.

Terms of Award

(i) In the case of teachers and other salaried persons coming from educational institutions or other Government/Autonomous organisations, the emoluments drawn by them in their parent organisation from time to time will be protected during the tenure of their Fellowship at the Institute.

(ii) Payment to the Fellows will be in the form of a Fellowship Grant, and not as salary. The amount of Fellowship would be determined in the range of Rs. 1,500/- to Rs. 3,000/- and fixed at the time of award. The Governing Body will have the discretion to fix the quantum of Fellowship Grant.

(iii) The term of Fellows will be from three months to two years which can be extended by another year.

(iv) The other conditions of award including the obligations of the Scholars will be communicated to the scholars after the process of selection is over.

(v) The selection of Fellows will not be restricted only to the applicants who respond to the advertisement. The Institute will have the discretion to select Fellows from other sources.

(vi) Two-third of the Fellowships will be earmarked for those who are already working in the Universities, research institutions or in other responsible positions. Preference will be given to those who have already done considerable work on their projects and wish to avail of the facilities at the IIAS to complete their work and write-up their results.

(vii) The Fellows will be provided free furnished accommodation at the Institute's campus.

(viii) The prescribed application forms may be obtained from the OFFICER ON SPECIAL DUTY (ADMN.) of the Institute by sending a self-addressed envelope (25 cm x 10 cm) or personally from the Institute. The completed application forms should reach the Institute latest by **31st May, 1986**. In case of candidates living abroad, the applications will be accepted upto **15th June**, 1986. Persons in service should apply through proper channel.

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NCERT

TEXTBOOKS FOR 1986-87 SESSION

For the school session 1986-87, NCERT will as usual provide textbooks and workbooks for Classes I to XII. A number of these titles are available and the rest, under print, are likely to be available during April-May, 1986.

NCERT textbooks and workbooks can be procured from the nearest Sales Emporium of Publications Division (Ministry of I & B) located at seven metropolitan cities, as per details given below :

The Business Manager,
Sales Emporium
Publications Division
(Ministry of I & B)

Super Bazar (2nd floor);
Connaught Circus;
NEW DELHI—110001

8, Esplanade East,
CALCUTTA—700069

Bihar State Cooperative
Bank Building,
Ashok Raj Path,
PATNA—800004

Commerce House, (2nd floor)
Currimbhoy Road,
Ballard Pier;
BOMBAY—400038

LL Auditorium,
736, Anna Salai,
MADRAS—600002

10-B, Station Road,
LUCKNOW—226001

State Archaeological Museum Building,
Public Gardens,
HYDERABAD—500004

Schools desiring bulk supplies directly from NCERT may place orders, within 15 days from the date of publication of this advertisement with :

Chief Business Manager,
Publication Department,
National Council of Educational
Research and Training (NCERT),
Sri Aurobindo Marg,
New Delhi-110016.

davp 780(1)/86

THE CENTRAL UNIVERSITY, PONDICHERRY-605 001

ADVT. No. 1/86-87

Announcement for Admissions 1986-87

MASTER OF PHILOSOPHY COURSES

The Central University, Pondicherry was established by the Parliament Act No. 53 of 1985. The University has taken steps to start M.Phil. programme (Full-Time and Part-Time) in the following areas of Study from August 1986 :

Subjects		**M. Phil. Centres**
TAMIL	KARAIKAL	—In the Central University Department at Arignar Anna Govt. Arts College, Karaikal.
ECONOMICS	MAHE	—In the Central University Department at Mahatma Gandhi Govt. Arts College, Mahe.
	PONDICHERRY	—In the Central University Departments at Colleges located in Pondicherry.
MATHEMATICS COMMERCE and ENGLISH	PONDICHERRY	—In the Central University Departments at Colleges located in Pondicherry.

FULL-TIME : (a) A candidate who has qualified for the Master's Degree in the respective subject from any University.

(b) A candidate who has qualified for the Degree of Bachelor of Arts (Hons.) B.Sc. (Hons.) or B.Com. (Hons.) of any University recognised by the University as equivalent to the Master's Degree in the respective subject will also be permitted to register for the M.Phil. Degree Course.

DURATION : The duration of the course shall extend over a period of one academic year.

COURSES OF STUDY : The courses of study for the degree shall consist of (a) Part-I comprising three written papers according to the syllabus prescribed from time to time ; and (b) Part-II Dissertation.

PART-TIME : Teachers working in affiliated Colleges or in the Departments of the University/Senior administrative and Scientific personnel employed by any State/Central Government or by any Union Territory/persons working in recognised public libraries/teachers working in recognised Higher Secondary Schools (including CBSE, ISR and Matriculation pattern Schools), possessing the requisite educational qualifications mentioned above.

DURATION : The duration of the course shall extend over a period of two academic years.

COURSES OF STUDY t The courses of study for the part-time M.Phil. degree shall consist of three written papers under Part-I at the end of the first year of study and Part-II Dissertation at the end of the second year of study.

HOW TO APPLY : Application forms together with detailed instructions including eligibility conditions, etc. for admission can be had either personally from the University Office at Pondicherry on cash payment of Rs. 20/- (Rupees Twenty only) per set or through post by sending a request along with Rs. 25/- (Rupees twenty five only) by way of crossed Indian Postal Order payable to **"The Central University, Pondicherry-605001"** and a self-addressed envelope of the size 28 cm × 20 cm to the Deputy Registrar (Examinations), Central University, Pondicherry-605 001 clearly indicating at the top of the self-addressed envelope the name of the M.Phil. course for which the application form is required. This payment includes postal registration charges.

Application forms will be available in the University Office from 1st of May to 31st May, 1986. Requisitions should come during this period.

Last date for receipt of completed application forms : 20th June, 1986.

SELECTION : A Selection Committee will be constituted and selections will be made purely on merit, on the basis of the University marks in the relevant qualifying examinations and the marks secured by the candidates in the written test and viva voce that will be conducted before admission at the M.Phil. Centres. The candidates notified should appear for the Interview and Written test at their own cost.

RESERVATIONS : Reservations will be made for 25½ seats in each course (15% for SC, 7½% for ST and 3% for Physically-handicapped candidates respectively).

Prof. D. Datchanamourthy
CONTROLLER OF EXAMINATIONS

UNIVERSITY OF MYSORE

Mysore Viswavidyanilaya Karya Soudha,
Crawford Hall, Mysore
Advertisement No. D6-1306/85-86
Dated : 21st April 1986

Applications in **eight sets** (8 sets) in the prescribed form are invited for the following Teaching posts to reach the undersigned on or before **16.6.1986, 5.30 p.m.** from duly qualified candidates of Indian Nationality. Indian Nationals who are residing abroad may also apply.

The name and number of posts are indicated hereunder and the category for which they are reserved is also shown against each.

I. Postgraduate Departments

Professors

(1) Sanskrit—1 (BSG), (2) Journalism—1(GM), (3) Anthropology—1(SC), (4) Physics—1 (SC), (5) Social Work—1 (ST), (6) Kannada—2 (1-SC, 1-GM), (7) Public Administration—1 (BCM), (8) Economics—1 (GM), (9) Statistics—1 (GM), (10) Philosophy—1 (BSG), (11) Political Science—1 (GM), (12) Botany—3 (2-BSG, 1-BT), (13) M.B.A—1 (SC), (14) Applied Botany—1 (GM), (15) Geology—1 (BCM).

Readers

(16) Central Instrumentation Service Laboratory—1 (BCM), (17) Social Work—1 (ST), (18) Geography (IDS)—1 (BSG), (19) Geography—1 (BSG), (20) Anthropology—1 (BSG), (21) Commonwealth Literature—1 (BCM), (22) Sanskrit—1 (BSG), (23) Physics—1 (BSG), (24) Sociology—1 (GM), (25) Political Science—1 (GM), (26) Biochemistry—1 (BCM), (27) Geology—1 (SC).

Lecturers

(28) Statistics—1 (GM), (29) Prakrits—1 (BCM), (30) Urdu—1 (BSG), (31) Historical Geography (History Department)—1 (BT), (32) Economics—1 (BCT), (33) Medieval Archaeology (History Department)—1 (BCM), (34) Russian—1 (BSG), (35) Political Science—1 (BCT), (36) Inorganic Chemistry—1 (SC), (37) Computer Science (Statistics Department)—1 (ST), (38) German—1 (BCM), (39) English—1 (BCT), (40) Psychology—1 (BT).

Scale of Pay

(a) Professor—Rs. 1500-60-1800-100-2000-125/2-2500.

(b) Reader—Rs. 1200-50-1300-60-1900.

(c) Lecturer—Rs. 700-40-1100-50-1600 (Plus other allowances admissible as per rules).

Qualifications

(i) Professors

Essential

(a) A Doctorate Degree or published work of an equally high standard ;
(b) Consistently good academic record with I or High II Class (B+) Master's Degree in a relevant subject or an equivalent degree of a foreign University.

Note

(i) Having regard to the need for developing inter-disciplinary programmes the degree in (a) and (b) above may be in relevant subjects.

(ii) Provided that if the Board of Appointment is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

(iii) Provided further that if a candidate possessing a Doctorate degree or an equivalent published work is not available the person possessing consistently good academic record and the relevant Master's Degree may be appointed (due weightage being given to M.Phil, equivalent research degree or research work of quality) on the condition that such candidate will have to obtain a doctorate degree or give evidence of published work of an equally high standard within 5 years of the appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

(c) 10 years of teaching-cum-research experience in degree or Post-graduate Classes;

(d) Capacity to carry out independent research work. Should have guided candidates for research degree successfully.

Desirable

Publication of research work of high standard in the subject.

(ii) **Readers :**

Essential

(a) A Doctorate Degree or published work of an equally high standard;
(b) Consistently good academic record with I or High II Class (B+ Master's Degree in a relevant subject or an equivalent degree of a foreign University.

Note

(i) Having regard to the need for developing Inter-disciplinary programmes the degree in (a) and (b) above may be in relevant subjects.

(ii) Provided that if the Board of Appointment is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

(iii) Provided further that if a candidate possessing a Doctorate Degree or an equivalent published work is not available the person possessing consistently good academic record and the relevant Master's Degree may be appointed (due weightage being given to M. Phil, equivalent research degree or research work of quality) on the condition that such candidate will have to obtain a Doctorate Degree or give evidence of published work of an equally high standard within 5 years of the appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

(c) Five years of teaching-cum-research experience.

Desirable

Publication of research work of high standard in the subject.

(iii) **Lecturers**

Essential

(a) A Doctorate degree or published work of an equally high standard ;
(b) Consistently good academic record with I or High II Class (B+) Master's Degree in a relevant subject or an equivalent degree of a foreign University.

Note

(i) Having regard to the need for developing inter-disciplinary programmes the degrees in (a) and (b) above may be in relevant subjects.

(ii) Provided that if the Board of Appointment is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

(iii) Provided further that if a candidate possessing a Doctorate degree or an equivalent published work is not available or is not considered suitable, the person possessing consistently good academic record (due weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a University degree or give evidence of published work of an equivalent high standard within 5 years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

(c) Teaching or Research experience of not less than 2 years in all.

Desirable

Publication of research work of high standard in the subject.

Explanation

Consistently good academic record means overall record of all assessment throughout the academic career leading to the Master's Degree which should atleast be B+or high Second Class.

Note

(1) The Teaching experience should be in degree or Post-graduate Classes,

(2) Candidates without knowledge of Kannada are required to learn Kannada of the Certificate Course level of the Institute of Kannada Studies, University of Mysore, or an equivalent Course as declared by the University within a period of two years from the date of appointment.

Additional Qualification/Specialisation in Respect of

Sl. No. 6

(For the post reserved for G.M.)

Specialisation in "Halegannada Sahitya on Paschyatya Kavya Mimamse".

Sl. No. 8

The qualification in (a) and (b) may be in Co-operation/Economics, Economic Co-operation.

Sl. No. 9

Specialisation in Statistical Quality Control.

Sl. No. 14

Specialisation in Seed Pathology, Mycology and Plant Pathology/Seed Technology.

Sl. No. 16

M.Sc., Physics with Electronic Specialisation or M.E., Electronic Research Experience or Ph.D. (in lieu of the qualifications in (a), (b) and (c).

Sl. No. 20

The qualification in (a) and (b) may be either in Social Anthropology or Sociology.

Sl. No. 21

M.A., in English—First or High Second Class; Specialisation : Ph.D. in Commonwealth Literature.

Sl. No. 26

The degrees in (a) and (b) may be in Biochemistry of Microbiology.

Additional Desirable : Published work in Microbiological Metabolism or Clinical Biochemistry.

Sl. No. 31

Essential

(a) A Doctorate Degree in Geography or published work of an equally high standard:

(b) Consistently good academic record with I or High II Class (B+) Master's Degree in Geography or an equivalent degree of a foreign University;

(c) Teaching or research experience of not less than 2 years in degree or post-graduate classes;

(d) Specialisation in Historical Geography.

Desirable

M.A. in History

(in lieu of the qualifications in (a), (b) and (c).

Sl. No. 33

Essential

(a) A Doctorate Degree in Ancient History and Archaeology or Published work of an equally high standard;

(b) Consistently good academic record with I or High II Class (B+) Master's Degree in Ancient History & Archaeology or an equivalent degree of a foreign University.

(c) Teaching or Research experience of not less than 2 years in degree or Post-graduate classes;

(d) Specialisation in Medieval Karnataka or Art and Archaeology.

(in lieu of qualifications in (a), (b) and (c)).

Sl. No, 37

Essential

I or II Class M. Stat. from Indian Statistical Institute trained in Computer Science or I or II Class Master's Degree with I or II Class Diploma in Computer Science (**in liue of (a) and (b)**).

Desirable

(i) Publication of work of high standard in the field of Computer Science.

(ii) Knowledge of Computer Oriented numerical Analysis.

Sl. No. 40

Additional Desirable Qualification

(a) Specialisation in Indian Psychology,

(b) Experience in using Electronic devices like Electro-Encephalograph.

Note in Respect of :

Sl. No. 6

The post is temporary.

Sl. No. 9

Those who have already applied for Advertisement No. D6-360/85-86 dated 18.7.1985 need not apply.

Sl. No. 13

Those who have already applied for Advertisement No. D6-758/83-84 dated 16.4.1984 need not apply.

Sl. No. 16

Those who have applied already for Advertisement No. D6-360/85-86 dated 18.7.1985 need not apply.

Sl. No. 18

The post is temporary, but likely to be continued.

Sl. No. 36

Those who have already applied for Advertisement No. D6-694/84-85 dated 5.12.1985 need not apply.

II. Under Graduate Colleges

Lecturers

(41) History-1 (BCM), (42) Sanskrit-2 (1-BCT, 1-BCM), (43) Political Science-1 (BT), (44) Criminology-1 (GM), (45) Mathematics-1 (SC), (46) English-1 (BCM), (47) Geology-1 (ST), (48) Psychology-1 (BSG) (49) Philosophy-1 (SC).

Scale of Pay

Rs. 1050-50-1200-60-1500-75-1950 PLUS other allowances admissible as per rules.

Qualifications

Essential

I or II Class Master's Degree or Hon's Degree in the relevant subject and ability to read and write Kannada fluently.

Desirable

Two years experience of Teaching in Degree or Post-Graduate Classes.

Publication of work of high standard or a Research Degree.

III. Institute of Correspondence Course & Continuing Education

Manasa Gangotri, Mysore-6

Lecturers

(50) Sociology-1 (SC), (51) Kannada-1 (BCM), (52) Malayalam-1 (ST).

Scale of Pay

Rs. 700-40-1100-50-1600 PLUS other allowances admissible as per Rules.

Qualifications

Essential

(a) I or II Class Master's Degree in relevant subject with at least three years teaching experience ;

(b) Knowledge of Kannada.

Desirable

Published work of credit.

General Instructions

Prescribed application forms may be obtained from the Registrar, University of Mysore, Mysore on payment of Rs. 15/- for the posts of Professors and Readers and Rs. 10/- for the posts of Lecturers. The amount may be paid in the Office of the Registrar/Finance Officer, University of Mysore, Mysore, or by crediting the amount in the State Bank of Mysore through Challan under the Head of Account "MYSORE UNIVERSITY FUNDS/BLOCK GRANT". Demand Drafts or Money Orders will also be accepted. **But postal Orders and Cheques will not be accepted.** The requisition for the application forms must be accompanied by a self addressed envelope of the size 6" x 12" duly stamped with Rs. 3.30 postal stamps, without which the requisition will be rejected. The application forms will be supplied only on production of the receipt/challan for having paid the application fee. The application free is not refundable.

Copies of publications and true copies of testimonials/certificates/marks cards should be enclosed in eight sets, which will not be returned. Those who are in employment should send their applications through their present employer.

Reservations to various backward classes shall be made in accordance with the Government orders issued from time to time and also in accordance with the provisions of the Karnataka State Universities Act, 1976. Applicants claiming the benefit of reservation shall enclose the certificate issued by the competent authority not earlier than one year.

No TA/DA will be paid to the applicants either for attending interviews or for joining the service if selected.

Persons below 18 years of age and above 60 years need not apply. The incomplete applications are liable to be rejected. The right is reserved with the University either to fill or not to fill the advertised posts.

Candidates selected should prepare to work anywhere in Mysore University jurisdiction.

Canvassing directly or indirectly would disqualify the candidature.

ENVELOPES SHOULD BE SUPERSCRIBED WITH "APPLICATION FOR TEACHING POST".

By Order
REGISTRAR

MASS COMMUNICATION RESEARCH CENTRE JAMIA MILLIA ISLAMIA

JAMIA NAGAR, NEW DELHI-110025

Advt. No. I (UGC-INSAT 1B)/1986

The Mass Communication Research Centre invites applications for the following posts for the UGC INSAT-1B TV Project.

I. **Project Officer** (1200-1900) — One.

Educational and other Qualifications

Essential

(i) A degree of a recognised University in 1st class in any branch of Communication Film, TV, Journalism, etc.

(ii) A post-graduate diploma or certificate in the area of Film Director/TV Production/Journalism.

(iii) 10 years' experience in TV production and also experience in Training TV production Prasaran of 3 years' (both will be concurrent).

(iv) Age : Upto 45 years.

OR

(i) A Master's degree in High Second Class.

(ii) 10 years' experience in teaching at College/University level.

(iii) 3 years' experience of Managing or Directing a TV Unit or a film society/experience of script writing for Radio, Film and TV (both experiences could be concurrent).

(iv) Broad interests in various fields of Media.

II. **Assistant Project Officer** (700-1300) — Two.

Educational and other Qualifications

Essential :

(i) A postgraduate Degree in High Second Class.

(ii) 5 years' experience of teaching at Post Secondary/Undergraduate level and two years' experience on working in any Audio-Visual Medium in the area of scriptline/production. (Both experiences could be concurrent).

(iii) Age : Upto 45 years.

III. **Producer** (700-1600) — One.

Educational and other Qualifications

Essential

(i) Hons. Degree from recognized University or its equivalent.

OR

Degree or Diploma in TV production/Film production from a recognized institute.

OR

Three years' experience of making short films/documentaries.

OR

Good knowledge of contemporary affairs of social and cultural environment and traditions of the country.

(ii) Proficiency in English, Hindi or Urdu.

(iii) Experience of three years' or more in TV production.

(iv) Ability to handle a wide variety of subjects and formats for production of TV programmes including short films, documentaries.

(v) Age : Between 23 and 35 years.

IV. **Production Assistant** (550-900)—One.

Educational and other Qualifications

Essential

(i) Degree of a recognized University or Diploma from ITI in Cinema or allied arts, Pune, or equivalent institution in Cinema or allied arts.

(ii) Proficiency in English.

Desirable

(i) Two years' practical experience.

(ii) Knowledge of Urdu, Hindi.

Age : Between 21-35 years.

V. **Steno-Typist (English) (330-560)** — One.

Educational and other Qualifications

Essential

Matriculation or equivalent qualification with proficiency in Shorthand and Typing at a speed of not less than 80 w.p.m. and 35 w.p.m. respectively.

Desirable

The candidates will be required to appear in a test in general English, Shorthand and Typing to be held by the Mass Communication Research Centre.

VI. **Peon** (196-232) — One.

Educational and other Qualifications

Essential

(i) Higher Secondary with Physics and Mathematics or its equivalent.

OR

Certificate from I.T.I.

(ii) Practical experience in any Technical Labs.

Desirable

Knowledge of Urdu and Hindi.

Age : Below 30 years.

NOTE :

1. Any of the qualifications mentioned above can be relaxed at the discretion of the Selection Committee in the case *of candidates otherwise exceptionally* qualified.
2. The above mentioned posts are meant for the INSAT-1B Project Unit and will continue upto March, 1990 in the first instance.

D.A., C.C.A., H.R.A.; P.F., Gratuity *Pension and other benefits will be given as* per Jamia Rules.

Application forms can be had from the Administrative Officer, Mass Communication Research Centre on any day except Sundays and Holidays, either personally between 10.00 a.m. to 12.00 noon or by sending a self-addressed and stamped envelope. Application should be accompanied with crossed Indian Postal Order or Bank Draft for Rs. 7/- (Rs. 2/- for SC/ST candidates) in the name of the Administrative Officer, Mass Communication Research Centre, Jamia Millia Islamia, Jamia Nagar, New Delhi - 110025.

The last date for receipt of application is **24-5-1986.**

M.B. Mughal
ADMINISTRATIVE OFFICER

DEPARTMENT OF CHEMICAL ENGINEERING & TECHNOLOGY

Panjab University
Chandigarh-160 014

Advertisement

Applications are invited for the post of a Research Associate at Rs. 1600/- p.m. (fixed) to work on the UGC Research Project entitled "Studies in Redox Mechanism of Some Typical Electroactive Organic Compounds" under the supervision of Professor L.R. Sharma. Candidates holding first class master's degree in Chemistry from a recognised university/institution followed by a Ph.D. degree in Chemistry/Electro-Chemistry with at least three years experience of research in the field of Electro-organic Chemistry duly evidenced by published research work would be eligible for appointment. Applications on plain paper with complete bio-data (duly supported by certificates, etc.) should reach the Chairman of the Department latest by **31st May, 1986**. The above post is co-terminus with the tenure of the project, which is upto **30-4-1987.**

Indian Institute of Science Bangalore

REQUIRES

1. SCIENTIFIC OFFICER (RESERVED FOR SCHEDULED CASTE) In Foreign Language Section (ADVT. NO. R (IA) 308-4/86)

ESSENTIAL : (i) Ph.D. or M.Sc. degree with a publication record comparable to the work required for Ph.D. OR M.E./M. Tech. degree or equivalent; and; (ii) A Degree/Diploma in Russian Language.

A degree/diploma in French is desirable. 5 years experience in Scientific and Technical translation from Russian; knowledge of two or more Foreign Languages like French, German, Japanese, etc. and experience in translating them into English; Ability to type in English, French, German and/or Russian; and oral interpreting in Russian and English at meetings.

Qualification and years of Experience **Relaxable** in case of candidates possessing exceptionally good record and outstanding capabilities.

DUTIES : Translate Scientific and Technical papers from Russian into English. Act as an interpreter. Prepare bibliography of Russian books and journals. Translate abstracts from Russian into English and Vice-Versa.

2. SPORTS OFFICER (ADVT. NO. R (IA) 308-5/86)

(i) 35 years or below with Master's degree in Physical Education preferably preceded by a degree in Science; (ii) Proficiency in Tennis, Cricket, Billiards, Basket Ball, Foot Ball, Volley Ball, Hockey, Table Tennis and Shuttle Badminton; and (iii) Ability in organising sports, athletics, gymnastics and swimming tournaments.

Ph.D. in Physical Education is desirable.

3. ASSISTANT LIBRARIAN GR. - I (ADVT. NO. R (IA) 308-6/86)

(i) A High II Class Master's degree in a subject other than Library Science with good academic record and; (ii) I Class or High II Class Master's degree in Library Science; (iii) Around 5 years experience in a professional supervisory capacity.

EMOLUMENTS: For each above Rs. 2,102/- (approx.) p.m. in the scale Rs. 700-1600.

Details and prescribed application forms can be obtained on request accompanied by a crossed IPO for Rs. 5/- (free of cost to SC/ST on production of Caste Certificate from a competent authority) drawn in favour of Registrar, Indian Institute of Science along with a self addressed Rs. 3.30 stamped 28 x 18 cms. size envelope on or before **20th May, 1986.**

REGISTRAR

GOA UNIVERSITY
BAMBOLIM, GOA

Applications are invited in the prescribed form for the following posts in this University :

Post	Number
Professor of:	
Konkani	1
English	1
Political Science	1
Economics	1
Chemistry	1
Reader in:	
Hindi	1
Philosophy	1
Physics	1
Geology	1
Lecturer in:	
Marathi	1
Portuguese/French	1
Economics	1
Sociology	1
History	1
Chemistry	1
Microbiology	1
Mathematics	1
Marine Science	2
Geology	1

2. The scales of pay and educational qualifications will be as prescribed by the University Grants Commission for the relevant posts. In addition to the basic pay, other allowances as admissible to the employees of the Govt. of Goa, Daman and Diu (which are equivalent to those of the Central Govt. employees) will also be admissible. A higher starting pay may be considered for exceptionally qualified persons for the posts of Professors or Readers. The appointments will be made on probation for two years but the probation period may be reduced or extended by the Executive Council in special circumstances.

3. Out of the two posts of lecturers in Marine Sciences, one is reserved for acandidate qualified in Marine Biology or Chemical Oceanography, while the other is reserved for candidate qualified in Geo-physics or Marine Geology or Physical Oceanography. Similarly, the post of Lecturer in Chemistry is reserved for a candidate qualified in Physical Chemistry.

4. Eight copies of the application in the prescribed form together with photostat or zerox copies of certificates and an *application fee of Rs. 10.00 (Rs. 5.00 for* candidates belonging to SC/ST) to be paid by a Demand Draft drawn in favour of the Registrar, Goa University, and payable at the State Bank of India, Panaji, should be sent in an envelope superscribed with "Application for the post of......" so as to reach the Registrar, Goa University, Bambolim, P. O. Santacruz, Goa, Pin-403 005, on or bebore **30th June, 1986**. Candidates *from abroad, Andaman & Nicobar Islands* and Lakshadweep may send their applications so as to reach the Registrar on or before **15th July, 1986**. Candidates who are already employed shall send their applications through proper channel. The university reserves the right of rejecting applications received after the due date or not in the prescribed form. Canvassing, direct or indirect, will be a disqualificatioc.

5. *Prescribed forms of application* can be had in person free of charge from the Registrar's office. Request for supply of a set of eight forms by post should be sufficiently in advance alongwith a demand draft for Rs. 10.00 drawn in favour of the Registrar, Goa University, and payable at the State Bank of India.

Dr. S.K. Gandbe
REGISTRAR

CENTRAL ROAD RESEARCH INSTITUTE
P.O. CRRI, NEW DELHI-110020
Advertisement No. 1/86

The Central Road Research Institute is a CSIR laboratory for R & D in Highway/Transportation Engineering, including pavements and materials, traffic and *transportation, geo-technical engineering,* bridge engineering, etc. Also, the Institute undertakes consultancy assignments and conducts training programmes for inservice highway engineers and others. The Institute has well equipped laboratories. A mini-computer and a number of microprocessors are already available. Microwax-II Computer has since been ordered and is expected shortly.

Applications are invited for the following posts:

1. **Scientist-EI** (**Rs.** 1500-60-1800-100-2000) — **Five Posts**

Qualifications and Experience : 1st Class B.E. /1st Class B. Tech./1st Class M.Sc. in related disciplines with 12 years experience OR M. Tech/M.E. /Ph.D. or corresponding degree in related disciplines with about 10 years R & D experience. Evidence of leadership and original work as evidenced by Patents/ Publications.

Field of Experience and Job Requirements

For Posts No. 1 and 2

Civil/Highway Engineering with R & D work in pavements, preferably on test *tracks also. For Post 2, qualifications in* Instrumentation Engineering can also be considered. To provide high level leadership on various aspects of pavement research, including characterisation of materials, design, construction, instrumentation, and data collection and analyses.

For Post No. 3

Monitoring and Evaluation of projects, including costing and accounting, preferably in one of the research disciplines of the laboratory (i.e. highway engineering, transportation engineering, geo-technical engineering, structural engineering) and/or from the disciplines of natural sciences with high expertise in the modern methods of R & D project management. To provide high-level leadership for the work of the Cell for project monitoring and evaluation, including evaluation of progress reports, costing, accounting, budget prepa*ration, maintaining an effective data-base,* etc.

For Post No. 4

Environmental engineering/science, preferably in environmental aspects of road development, road construction and road transport. To provide high-level leadership to research on environmental aspects of road development, road construction and road transport, including monitoring of environmental situations *and development of corrective measures.*

For Post No. 5

Information and related activities preferably in the area of highway/transportation engineering. To provide high-level leadership in maintaining effective liaison with user organisations; operating information base; editing and bringing out reports, papers and other publications; dissemination of scientific and technical information; organisation of training programmes for outsiders; *preparation of training* programmes for CRRI staff and application of operational research techniques to Institute's activities.

2. **Scientist-C** (Rs. 1100-50-1600) — **12 Posts**

Qualifications and Experience : 1st Class B.E./1st Class B. Tech./1st Class M.Sc. in related discipline with six years experience/M.E. with four years experience/Ph.D. (Science) in related disciplines with two years experience/Ph.D. (Engg.) Minimum years of experience relaxable only in exceptional cases.

Field of Experience and Job Requirements

For Posts No. 1 to 5

Highway Engineering with experience in pavement research. To provide leadership to R & D work in pavement engineering, including planning of experiments, characterisation of materials, pavement design, construction, instrumentation and quality control of test tracks, collection and analyses of data.

For Posts No. 6 and 7

Road Construction. To provide leader*ship to R & D in the management of* road projects, indentification of appropriate technologies and to develop new and improved technologies.

For Post No. 8

Traffic and Transportation including Road Safety. To provide leadership to

R & D work in traffic and transportation, including road safety.

For Post No. 9

Material beneficiation and low-volume roads. To provide leadership to R & D work for the development of techniques for the use of soils, low-grade materials, wastes, etc. in road construction; planning, design, construction and maintenance of low-volume roads.

For Post No. 10

Bridge/Structural Engineering. To provide leadership to R & D work on bridges and structures on roads.

For Post No. 11

Geo-technical Engineering. To provide leadership in R & D work in the field of geo-technical engineering with special reference to land slide control and ground improvement techniques.

For Post No. 12

Computer Science. To provide leadership in computer applications to the work of CRRI both in R & D and administration.

3. **Scientist-B** (Rs. 700-40-900-EB-40-1100-50-1300) — **8 Posts**

Two posts are reserved — One each for Scheduled Caste and Scheduled Tribe candidates.

Qualifications and Experience : 1st Class M.Sc./1st Class B.E. or M. Tech./M.E. /P.h.D or equivalent degree in related disciplines. Candidates with equivalent degrees in other related fields, as indicated in the following are also eligible. (Candidates awaiting examination results may also apply but will be considered subject to communication of results prior to the interview). Previous experience will be an added qualification.

Field of Experience and Job Requirements

For Post No. 1

Highway Engineering (Rigid Pavements). For R & D work for materials, design, construction and maintenance of rigid and semi-rigid pavements.

For Post No. 2

Highway Engineering (Flexible Pavements). For R & D work for materials, design, construction and maintenance of flexible pavements.

For Post No. 3

Mechanical Engineering for providing support in the running of Mechanical Engineering Workshop and for R & D work in the area of mechanical engineering as applied to highway/transportation engineering.

For Post No. 4

Highway Engineering (Road Construction). For R & D work on road construction aspects, including the development of new and improved technologies.

For Post No. 5

Bridge/Structural Engineering. For R & D work for bridges and structures for roads.

For Post No. 6

Environmental Engineering/Science. For R & D work on environmental aspects of road development, road construction and road transport, including the development of corrective measures.

For Post No. 7

Project monitoring and evaluation with academic degree in Statistics/Economics/Mathematics/Commerce/Computer Science. To work in the PME Cell of CRRI for evaluation of progress reports, budgeting and accounting of funds, preparation of progress reports, etc.

For Post No. 8

Computer Science. For computer/Micro-processor applications in the activities of the Institute for both R & D and administration.

4. **Technical Assistant Grade-VIII (Group-III)** (Rs. 425-15-500-EB-15-560-20-700) — **One Post.**

Qualifications : B.Sc./3-years Diploma in the preparation of films including Video films.

Experience : Preference will be given to those with experience for the preparation of Video films.

Job Requirements : To prepare Video films on Institute activities as well as film for training.

GENERAL: The posts involve substantial amount of field touring duties. All the above posts carry usual allowances as admissible to Central Government employees as made applicable to CSIR employees. Higher start can be given to deserving candidates.

Persons selected will be required to serve anywhere in India including the proposed Regional/Extension Centres of CRRI.

Prescribed application form for all the above posts are obtainable (free of cost) on or before 19-5-1986 from the Director, Central Road Research Institute, Delhi-Mathura Road, P.O. CRRI, New Delhi-110 020. Request for application forms must indicate the number of advertisement, name of the post and full address of the candidate in block letters with pin code along with a self-addressed envelope of size 11 x 23 cms. duly affixed with postage stamps worth Rs. 1.25 for each application form separately.

Completed application forms alongwith application fee of Rs. 8/- (no fees is required in case of SC/ST candidates) in the form of Crossed Postal Order drawn in favour of the Director, Central Road Research Institute, New Delhi should reach the Central Road Research Institute, Delhi-Mathura Road P.O. CRRI, New Delhi-110 020. on or before **16-6-1986**. Separate fee is required for each post.

Applications should be supported with attested copies of qualifications and experience certificates.

Candidates called for interview for these posts will be paid travelling allowances limited to single second class railway fare (each way) by shortest route from their normal place of residence or place of undertaking the journey, whichever is nearer, to the place of interview (on production of the tickets, in case road journey is involved) provided the journey is more than 80 kms. This amount will be paid by money order after attending the interview.

Applications from employees working in Government Departments, Public Sector Organisations and Government funded research Agencies will be considered only if forwarded through proper channel.

Details of any blood relation already employed in Central Road Research Institute must be indicated on a separate sheet attached with the application form.

Incomplete applications, applications received after the closing date or applications received without postal orders will be rejected.

CANVASSING IN ANY FORM AND/OR BRINGING IN ANY INFLUENCE POLITICAL OR OTHERWISE WILL DISQUALIFY THE CANDIDATE FOR THE POST APPLIED FOR.

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